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A GRAMMAR SCHOOL GEOGRAPHY

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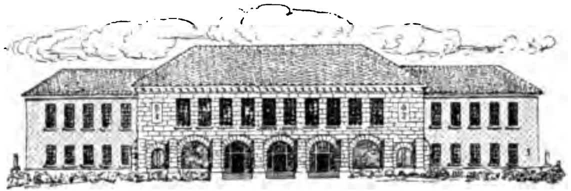

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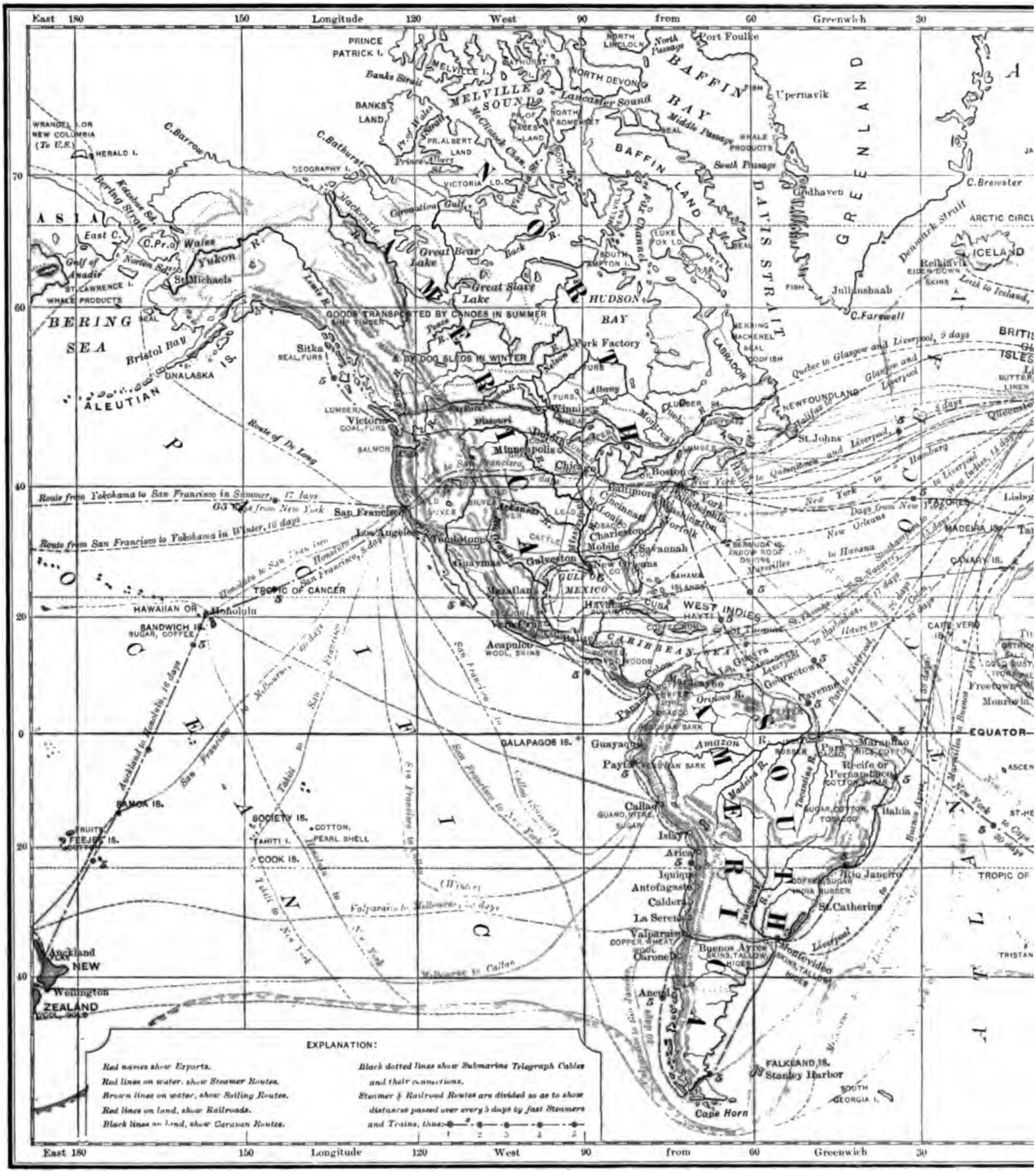

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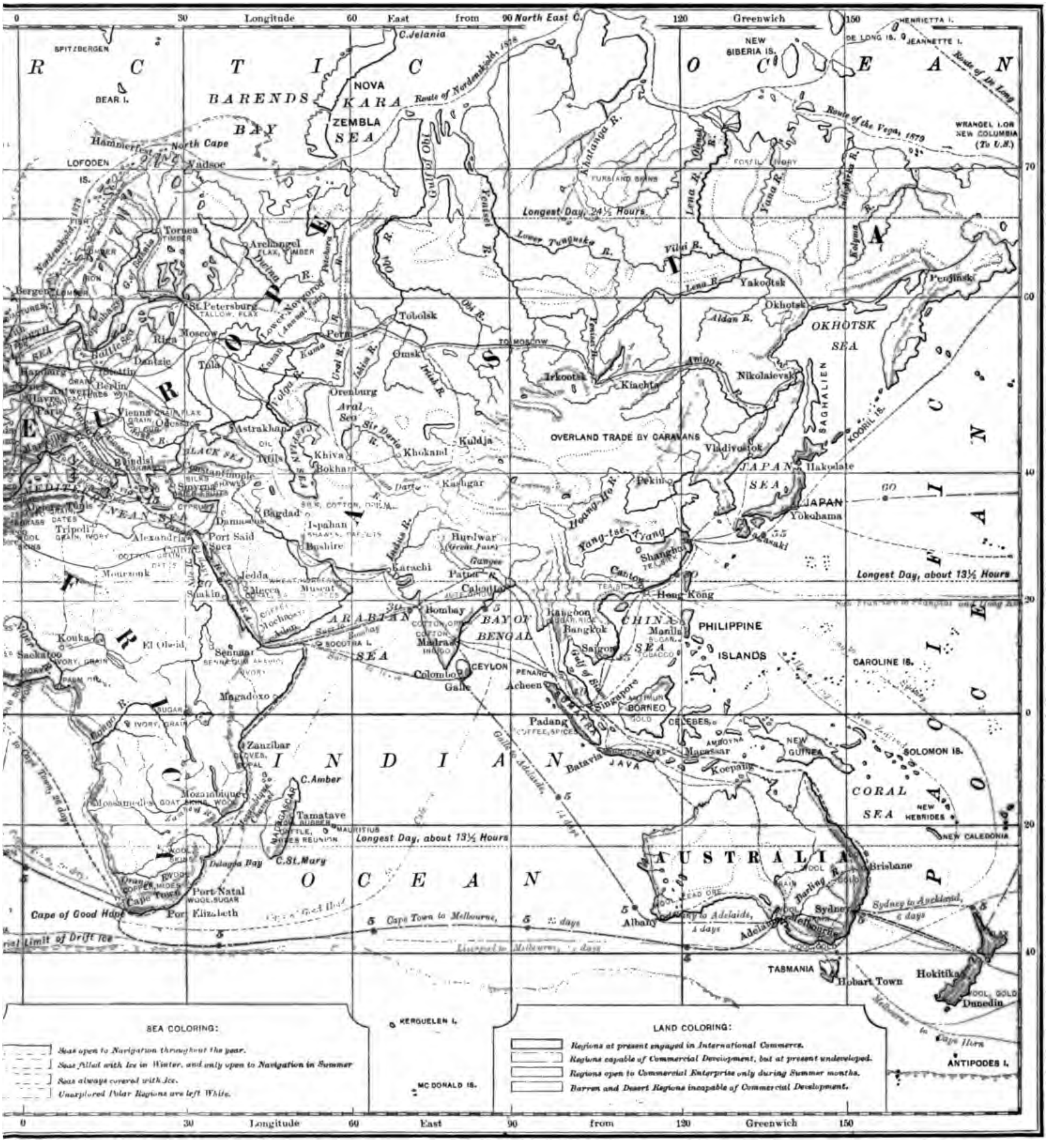

ESOURCES, PRODUCTIONS, AND TRADE.

A

GRAMMAR SCHOOL GEOGRAPHY

DESCRIPTIVE, INDUSTRIAL, AND COMMERCIAL

With Maps and Illustrations

BY

JOHN N. TILDEN, A.M., M.D.

AUTHOR OF "A COMMERCIAL GEOGRAPHY FOR ACADEMIES, HIGH SCHOOLS
AND BUSINESS COLLEGES"

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DEPARTMENT OF EDUCATION
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PREFACE

THIS book is intended for use in Grammar Schools, and is accordingly less advanced in form and method than the Author's academic treatise on the same subject. The purpose of it is to increase the knowledge of facts that pupils have acquired from the study of Elementary Geography, and to show the relations which these facts have to one another, thus disclosing their practical bearings upon the life of man. In brief, this book aims to amplify and make fruitful the geographical teaching of the Primary School.

In the existing school text-books of geography a good account is given of the physical conditions of life, of the distribution and characteristics of population, and of the political status of the various nations of the world. Such books afford, also, considerable information about occupations, products, and trade. But this information loses much of its value because it is stated in generalities, and because it is so arranged that the relations between its parts are not made plain. Moreover, the bare facts of political geography usually receive an excess of attention for the reason that during the several years devoted to this branch the selfsame topics are set forth first in simple, and afterwards in maturer forms of expression, and much of the pupil's advancement is thus nominal rather than real.

There is abundant testimony that this traditionary treatment of the most comprehensive of school studies is not only less fruitful than it should be, but wearisome to all concerned. Progressive educators realize that the doings of mankind — how men live, and by what means the race is advancing in civilization — are the most useful things that geography can teach. They know that this study can have the interest and utility which rightly belong to it only when it is taught with direct reference to the business of life. This book is an attempt to provide a systematic outline and guide for the class work that the best teachers are already doing without such helps.

To enliven the general subject by interesting details, whether of curious facts or parallel information, would have been both pleasant and easy; but it is only by the exclusion of whatever is merely attractive that the essentials can receive in reasonable space any suitable attention. Matter that is simply informatory, or that for any reason is subordinate in importance, is printed in secondary type.

The illustrations have been prepared with the view to instruct the pupil, and not merely to beautify the pages of the book, and the maps and charts have an industrial and commercial purpose. Statistics of production and trade are given only when necessary to the treatment, and then in round numbers. In order that these figures may be useful for purposes of comparison, they are chosen as far as possible from the statistics of the same year, — in this edition of the year 1890. Foreign countries are treated of in the order of the importance of their dealings with the United States.

In the Supplement will be found a condensed exposition of the principles of Mathematical and Physical Geography, for use in any classes that may not have given sufficient attention to these departments of the study.

J. N. T.

TEACHERS' NOTE ON THE REFERENCE CHART

The Reference Chart with which this book opens has been prepared as a supplement to the maps that are interspersed in the text, in order to afford in one view a comprehensive idea of the world's commercial and industrial activities, and especially for purposes of reference in the study of international as distinguished from internal trade.

The Chart having been examined, and explained in the light of the color key which accompanies it, certain general features will at once suggest themselves, upon which oral instruction may, from time to time, be given.

The devices of coloring are such as to make it plainly apparent —

1. That man's activities, as a whole, are largely determined for him by his physical surroundings; thus:

2. That his labors in production are mainly restricted to the land surface of the globe; that is, to about one-fourth of its area;

3. That this fourth lies principally in the Northern Hemisphere;

4. That man's energies are further limited by temperature, this in turn depending upon altitude as well as latitude, and modified by trade-winds and ocean currents;

5. That the most active industries are as yet confined to about one-seventh of the earth's land surface, lying in the temperate zones of Europe and North America; and

6. That the latitude of this field is higher in Europe than it is in America.

The people of the world, seeking fertile lands and easy means of communication, have found both in the great river-basins, as in China, India, Egypt, and our own Central States. The rich soil of these great basins is the deposited washings from the higher lands. These higher lands, accordingly, tend everywhere to become less and less productive. The amount and regularity of rainfall is another condition upon which the production of food and of textile fibers largely depends. The regions of Africa, Australia, and southwestern Asia shown in white upon the Chart are desert and unproductive mainly because they are rainless.

At the several stages of progress, General Reviews, as a test of the pupil's acquirement, should be founded on this Chart to show (1) what and where the principal natural resources of the world are; (2) what the great raw staples are, whence they are derived, and where and for what products they are exchanged; and (3) where the great centers of manufacture are, what each chiefly contributes to commerce, and the causes that have led to the establishment and growth of particular industries in certain regions or at particular points.

The subject of Geography readily lends itself to such supplementary discursive treatment as can, in the judgment of the teacher, be suitably given to it at the successive stages. In our rapidly progressive age the human family is acquiring greater and greater mastery over the stores and forces of nature, and it is both interesting and profitable to note and consider the daily steps of this advance. In current newspapers and periodicals, items and articles are constantly appearing, having reference to occupations and productions, transportation and exchange, and allied topics. It is the Author's own experience that such items and articles may with advantage be brought to the notice of geography classes, since they are suggestive of independent inquiry and give greater vividness to the impressions derived from the text.

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CHAPTER I

INTRODUCTION

PRODUCTION AND EXCHANGE

COMMERCE DEFINED. — Commerce is the interchange of commodities. When carried on between different countries, it is called **foreign** or **international commerce**; when between places of the same country, it is called **internal** or **domestic commerce.**

The term **interstate commerce**, used in the United States, applies to commerce between persons living in different states. In such commerce goods are necessarily transported over routes that extend into more than one state.

The term **commerce** is applied mostly to the exchange of merchandise on a large scale.

Trade may be either foreign or domestic, and may comprehend every species of exchange of values, but commonly the term is applied to the business of buying and selling by people of the same country.

Trade is wholesale or retail, according as the dealings are in large or small quantities.

Carrying trade is a term applied to the business of transporting merchandise from one country to another.

The incentive for commerce and trade of all kinds is the principle of mutual benefit. Without this inducement, there would be no traffic in commodities, either domestic or foreign.

IMPORTS AND EXPORTS. — Goods brought into a country are called **imports** of that country. Goods sent out of a country are called its **exports**.

A man that deals largely in the commodities of commerce, generally dealing by wholesale, is called a **merchant**. One that sells goods belonging to others, receiving a percentage for his services, is called a **commission merchant**. One that does business at retail, or on a small scale, is called a **tradesman**.

The domestic trade of a country is usually more valuable than its foreign traffic. When a populous country like the United States produces the necessaries of life in abundance, its domestic or internal trade greatly exceeds in value the total of its foreign commerce.

TARIFFS, BOUNTIES, AND SUBSIDIES. — A government may, by changes in the laws that regulate its commerce, disturb industries and trade.

Taxes or duties on imports, commonly called a **tariff**, are fixed by law in order to raise money for government use.

When the only purpose of a tariff is to raise money for the payment of the expenses of government, then it is called a **revenue tariff**.

A scale of duties is sometimes fixed on articles, with the view of encouraging their manufacture at home. This is called a **protective tariff**.

Commercial treaties between different countries may modify a tariff, and thus change the prices of goods exchanged between these countries.

A domestic industry is sometimes helped, not by imposing a duty on competing imports, but by the payment of money directly from the government. A grant of money for this purpose is called a **bounty**.

Bounties paid on exports, or to the owners of ships for running them, or donations of land to railroads, or to manufacturing or other enterprises, are called **subsidies**.

In general, any direct money aid, given by the state to assist private industries, is called a subsidy. Such aids are given on the theory that the state is to be benefited by the development of these industries. The manufacture of beet sugar in Germany is an example of an industry encouraged by a government bounty.

CONSULS. — To protect the interests of its citizens and its commerce, each nation has agents appointed by the government, called **consuls**, residing at every foreign city of commercial or industrial importance. These representatives devote their time to promoting the interests of their country and its individual subjects. Consuls try to increase international trade, and to prevent fraud or deception in the sale and purchase of goods. They make reports to their own governments, relative to the condition of trade and production in the region where they are located. For the guidance of these consuls the various nations have made treaties of commerce with one another.

During the sixteenth and a portion of the seventeenth centuries Latin was the language of diplomacy. Since then French has been generally employed in the intercourse between nations. Custom now allows diplomats to agree upon the language most convenient. English is at present more extensively used in commerce than any other language.

PRODUCER, MIDDLEMAN, CONSUMER. — In business these three terms are used to distinguish the buyers and sellers of merchandise in the market.

The one that brings forward or produces any article that has an interchangeable value is the **producer**. He is the first seller, generally at wholesale, to the **middleman**, who buys to sell again. The middleman is the first buyer, and is a necessary dealer in nearly all mercantile life. He may sell at wholesale or directly to the consumer.

There are in some kinds of business several middlemen between the producer and the **consumer**. Each transaction must increase the cost to the last purchaser, who puts the commodity to its final use.

MONEY.— Whatever passes freely from one person to another, and is accepted without question throughout a country in payment for goods or services, is **money**.

It is important to observe that the notes of one government do not pass current within the jurisdiction of another. With coins of gold and silver the case is different. This is for the reason that gold and silver have in all countries a recognized value as precious metals, and coins made of them are received *according to their weight and fineness*. The Mexican silver dollar, for example, passes freely in the trade of the Chinese.

Money has two principal uses : (1) it is a *medium of exchange* and (2) it is a *measure of value*.

As a **medium of exchange** money has a peculiar attractiveness, because of the fact that it can always be used at its full worth in the purchase of merchandise. But it is often difficult to exchange merchandise for money without loss. For the *payment of wages* in modern industries money is indispensable. Factory operatives, for example, seldom produce anything that is directly adapted to their own wants; but the money which they receive for their labor is a medium anywhere acceptable in exchange for the supplies they need.

In countries of inferior civilization, as, for instance, in most parts of Asia and Africa, coined money is everywhere a medium of exchange, but in the countries of Europe and America, where commercial confidence prevails, the use of metallic currency is almost wholly confined to small retail dealings. For these, silver has long been the principal metal used in coinage.

In trade transactions on an extensive scale, the notes of banks and of government are largely superseded by checks, drafts, bills of exchange, negotiable notes, and other commercial "paper." All these are simply contracts and promises of responsible individuals and business houses, and as such they represent value and may be exchanged as money.

Money as a Measure of Value. — In its other use money affords a ready means of estimating the comparative value of different commodities. Without a common article which could be used as a standard of comparison, no such estimate could be made. With the first use of money the comparison of values became easy, and the resulting exchanges definite. The keeping of accurate accounts was then for the first time possible, and the whole business of banking rests on the same foundation.

What is called the *balance of trade* in the commerce between two countries is merely the difference between the exports and the imports of goods. If a country sells more goods than it buys, the balance of trade is said to be "in its favor"; if it buys more than it sells, the balance of trade is said to be "against it."

In all cases the deficiency is made good by the shipment of bullion from the debtor country. Bullion thus transferred is not money, but merchandise, and the market value of it varies from time to time like that of other merchandise. Thus we see that international commerce is simply the exchange of commodities for commodities, and that money is used in it *only as a measure of value.*

It is probable that gold and silver, at first by weight, and afterwards in the form of coins, were introduced into the Mediterranean countries five hundred years before the beginning of the Christian era, and that these metals had been used as money in the East many centuries earlier still.

In the trade of people, either uncivilized or backward in civilization, some articles that are used for food, clothing, ornament, or general purposes, serve also as money. Thus, in China, opium is everywhere received in exchange, and in many parts of Africa cattle are a standard of value, as they were in very ancient times amongst the Latin peoples. Furs are used as money by the Eskimos. The ornamental shell-work called "wampum" was the currency of the aborigines of our own country.

CONDITIONS ESSENTIAL TO COMMERCE.

—The commerce of a nation is dependent on the character and extent of its *natural resources*, on the activity of its *industries*, and on its *means of transportation.*

By the **natural resources** of a country are meant its mines, fields, forests, and fisheries. From one or another of these storehouses of nature all commodities must, in the first place, be derived. Products thus first derived from nature are called the *raw materials* of industry and commerce. Iron ore in the mine, wheat in the field, standing timber in the forest, and salmon from the fisheries are raw materials.

The **industries** of a country include all of its labor employed in producing, improving, transporting, and exchanging goods. But in common usage the term has a narrower sense, so that by the industries of a country we mean in particular all the work involved in changing raw materials into *finished products.* The steel pen you write with is a finished product of the mine; flour is a finished product of the field; your desk, of the forest; canned salmon, of the fisheries.

It often happens that the finished product of one industry is but the raw material of another. Thus leather is the finished product of the tanning industry, but the raw material of shoemaking.

Motive Powers in the Industries. — The principal natural agents used for driving machinery are water-power and steam.

In the Netherlands and some other countries the **force of the winds** is utilized for pumping, milling, and other purposes; and in some uses, such as the running of sewing-machines and street cars, **electric power** is industrially applied; but neither of these agents can at present be considered as having great general value among the motive powers of manufacture.

Wherever water falls far enough and in sufficient volume to be used for moving machinery, it forms what is called a **water-power**. For very many centuries waterfalls have been utilized for the grinding of grain. Supplying a power much cheaper than that of steam, their advantages are now availed of to the utmost in industrial communities. Water-powers have in fact determined the sites of many of the great manufacturing towns. The cotton factories of Fall River, the silk mills of Paterson, the furniture shops of Grand Rapids, and the flour mills of Minneapolis owe their growth and prosperity to the great water-powers on which they have been established.

More than one-third of the machinery used in American industries is driven by means of this cheap natural agent. In New England and the "Middle" States the irregular and often rugged surface of the country breaks the river-beds into frequent falls, and in these states, accordingly, we find the mechanical industries earliest and most widely established.

The application of **steam-power** to the driving of factory machinery has led to the *diffusion of manufacturing industries*, and especially to their development in the great cities of the world. Steam is used wherever water-powers are not available, and is often brought in as an auxiliary where the flow of water is feeble or intermittent. The factory industries of most seaport and lowland cities, such as New York, Chicago, St. Louis, and New Orleans, are wholly dependent for motive power upon the use of steam.

The principal **transportation facilities** of a country consist of its railways with their rolling stock, and its navigable waterways, natural and artificial, together with its shipping and vessels of every kind.

A great part of the domestic traffic of every country is carried on over ordinary roads, and by horses, cattle, and other *draught-animals*. On a good, level road a horse can draw, at the rate of two to four miles an hour, twenty to thirty times as much as it can carry on its back. A yoke of oxen will draw, over a rough road, a load that a span of horses could scarcely move.

In unprogressive lands, especially in parts of Asia and Africa, goods of all kinds are transported either by *pack-animals* or, for shorter distances, upon the backs of *porters*.

In the Reference Chart (see *Frontispiece*) those regions that are not commercially developed, and in which the means of transportation are still crude and primitive, are colored yellow.

The most valuable of pack-animals is the camel, which is used very extensively in traversing the desert parts of Asia and Africa. The day's march of a caravan of these animals is about twenty-five miles.

Camel Market at Cairo

The principal *caravan routes* are from Russia into China, from Damascus eastward into Persia and southward to Mecca, and from the several Barbary States southward to the Sudan.

In mountainous regions mules and donkeys are sure-footed pack-animals. In South America the llama carries ores to the coast from the mines in the Andes, and returns to the mines laden with supplies.

INTERNAL TRADE. — By far the most important of transportation routes is the **railway**. Within a period of less than fifty years the steam locomotive, by opening new areas to settlement and industry, and by bringing producer and consumer nearer together in time, has vastly increased the commerce of the world. In 1846 there were only 3000 miles of railway in the world. In 1890 the mileage was a hundred times as great, nearly half of it being in our own country.

A railway, with its equipments, costs from $20,000 to $60,000 per mile.

The first steam railway for general purposes was that between Stockton and Darlington, in England, opened in 1825. The first passenger train in America ran between Albany and Schenectady, in the state of New York, in 1831.

A **railway system** consists of the main lines which connect large cities with one another, together with the numerous smaller tributary roads. The smaller roads bear very much such a relation to the main lines as the branches of a tree bear to the trunk.

The main lines of railway are called **trunk** lines.

The tributary railways are called **branch** roads.

Merchandise transported by rail is classed either as **freight** or as **express** matter. Commodities of great volume, such as wheat and coal, are carried in bulk as freight. Goods needing to be delivered promptly are sent by express on fast passenger trains, as are the mails. The general principle applicable to the railway transportation of merchandise is that the smaller and more valuable the parcels, the more numerous the handlings, and the greater the speed, the greater is the cost of carriage.

The express business has grown up within very recent years, having its humble beginnings on the New York and Boston Railway in 1839. Express routes have now multiplied in the United States wherever railways extend, and the system is being adopted in some countries of Europe.

Electric power is now employed for the carriage of merchandise by a system called **telpherage**. By this method tray-like receptacles of goods are moved with great speed along a wire, from which they are suspended on wheels.

The internal waterways of a country consist of its lakes and navigable rivers and its canals. Their importance in commerce is chiefly due to the fact that water transportation, though slow compared with that of railways, is very much cheaper.

The *Great Lakes* of our own country are important commercial highways, affording, with their connections of river and canal, a continuous water-route from the Northwest to the Atlantic seaboard.

While the *river-systems* of the world are, and must continue to be, busy arteries of trade, yet their relative commercial importance has been diminished by the multiplication of railways and the lowering of their freight charges. This is especially true in the case of the Mississippi River, the general course of whose waters is from north to south, while our national growth, and the direction of our domestic trade, have been mainly upon lines running east and west. Steamboats now ply on most of the great rivers of the world.

In the northeastern quarter of the United States, and in the lowland countries of Europe, the various *canal-systems* are of special importance to trade.

The Manchester Ship Canal, in England, and the Erie and St. Mary's Falls canals, in our own country, are water-routes and connections of great **domestic** importance. The Suez Canal, opened in 1870, and the Nicaragua Canal, now constructing, are waterways of great **international** value. Some account of each of these canals will be given in its place in the following text.

OCEAN COMMERCE. — Many of the regions which produce the raw materials of commerce are separated from the great manufacturing centers by the oceans which make up three-fourths of the surface of the globe. Hence, a great part of international traffic follows **ocean routes.** (See *Reference Chart.*) In the greater part of seagoing trade the steamship has superseded the sailing-vessel.

The carrying capacity of vessels, that is, the space available for stowing away cargo, is estimated in tons. The adopted measurement is 100 cubic feet to the ton. A steamship, for example, that can carry a cargo of 10,000 tons is said to have that amount of **tonnage**.

A steamship is estimated to have three times the carrying power of a sailing-vessel of equal tonnage, because it can make, on the average, three voyages to the sailing-vessel's one.

Ocean traffic, particularly in the case of sailing-vessels, is to a great extent dependent on the *ocean currents* and the *prevailing winds.*

The most important of the **ocean currents** is the Gulf Stream, which flows from Florida Strait, generally parallel with our eastern coast as far as New England, and then sweeps across the Atlantic and washes the western shores of Europe.

The winds most helpful in navigation are known as *trade-winds*, *anti-trade-winds*, and *monsoons.*

The *trade-winds* prevail in equatorial latitudes. They blow from the northeast and from the southeast, and are separated by the regions of equatorial calms. (See *Chart.*)

The *anti-trade-winds*, sometimes called "prevailing westerlies," are found in temperate latitudes. In the North Temperate Zone they blow from the southwest; in the South Temperate Zone they blow from the northwest. They are separated from the trade-winds by the tropical calms.

Trade-winds blow uninterruptedly, but their location varies with the season of the year. As they are caused by the heating and expansion of the atmosphere in equatorial regions, they move with the sun, either away from or towards the equator.

Monsoons belong to the class known as periodical winds. They blow part of the year in one direction, and part of the year in the opposite direction, with great force and steadiness. They usually prevail on the western and southern coasts of continents, and by reason of their periodical change of direction the monsoons are reliable aids to commerce.

The **Weather Bureau** of the United States furnishes warnings of the approach of storms, the probabilities of winds dangerous to navigation, and the probabilities of changes of temperature. The staff of the Bureau consists of about 800 observers, who send reports twice a day from weather stations in all parts of the country. The observations are made at the same actual time (not meridian time) at all the stations, and include temperature, height of barometer, direction of wind, percentage of cloudiness, humidity, and amount of rainfall.

The predictions for the succeeding twenty-four hours are based on the fact that most storms, once formed, travel in an eastwardly direction, at a rate that can be estimated with a fair degree of accuracy.

Most of the storms of the United States may be reduced to one of two tracks. Those that originate at the base of, or beyond, the Rocky Mountains, move eastwardly across the continent. Those that originate in the Caribbean Sea or the Gulf of Mexico sweep along the Atlantic coast.

The storm consists essentially of an area of low barometer, toward the center of which the wind blows spirally from all directions. The area of low barometer may, or may not, be accompanied by rain. Almost all the rain falls on the front edge of the area of low barometer.

A storm originating in the west is commonly preceded by an easterly, and clears with a westerly, wind. The Atlantic coast storms are preceded by a northeasterly, and clear with a southwesterly, wind.

All the great trading nations of the world have a coastline on the North Atlantic or its arms. It is therefore the scene of the major part of ocean commerce. Remembering that over this region *the prevailing winds are westerly*, it is easy to see that Atlantic storms can only be predicted from "our side of the water." Here a vast land area is dotted with weather stations from which storms can be tracked as they move eastward. To shipmasters, especially of sailing-vessels, the forecasts of the Weather Bureau are of the highest value.

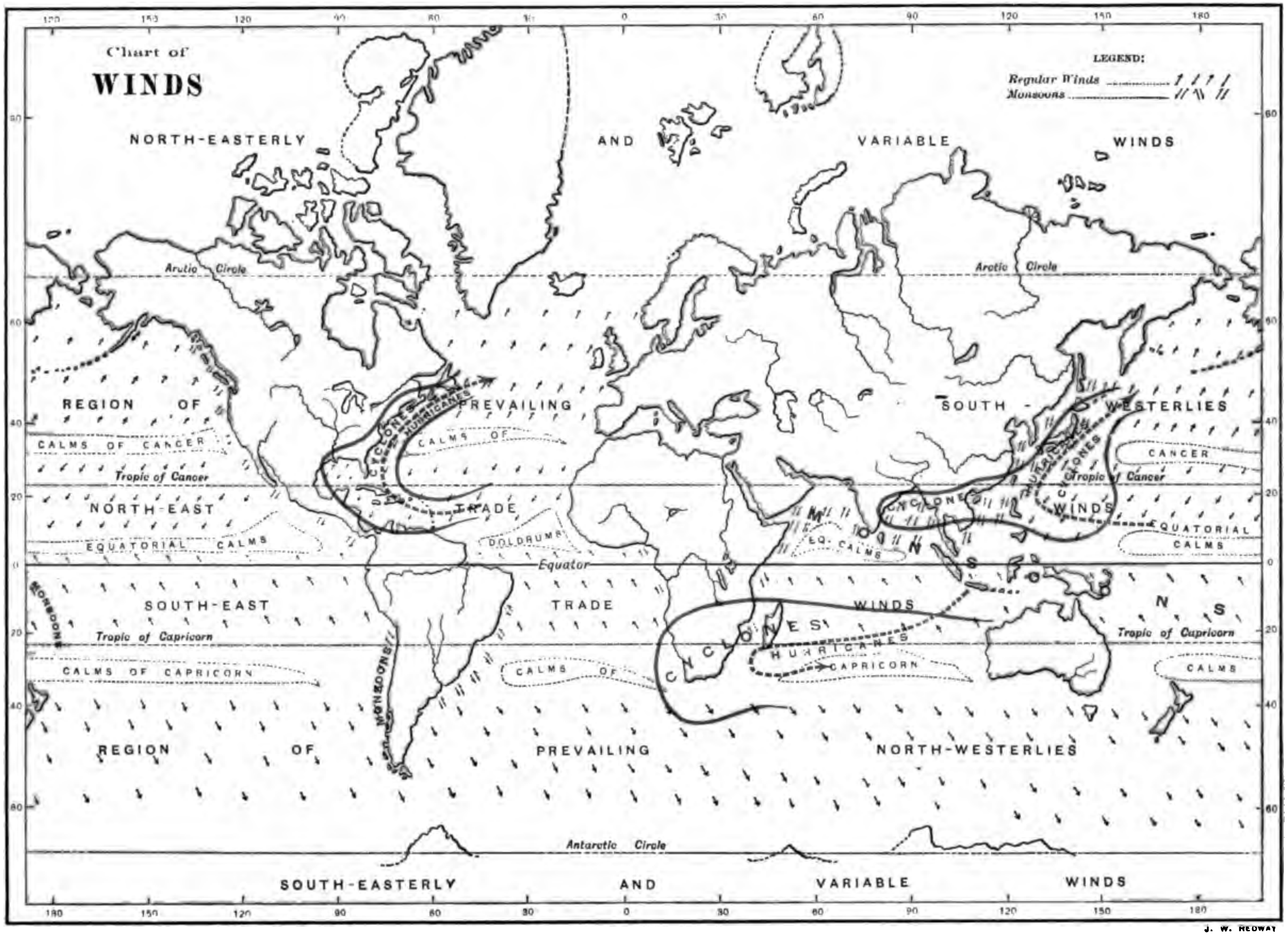
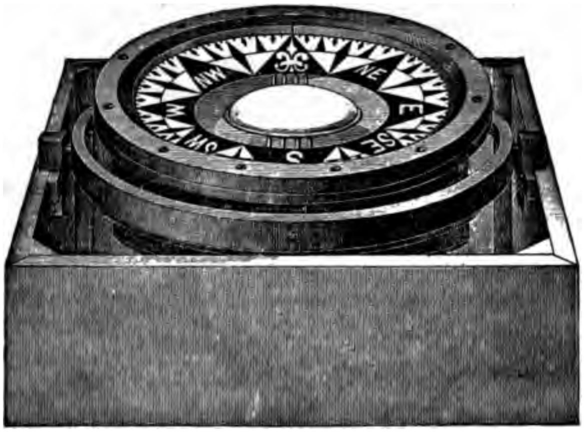


Chart of **WINDS**

J. W. REDWAY

Indispensable to ocean navigation are the *compass* and the *chronometer*, for determining with accuracy the course and position of ships at sea.

The **mariner's compass** consists of a magnetic needle or needles attached to a circular card which moves freely with them on a pivot. Card and needle are contained in a glass-covered bowl which is suspended in gimbals in order to preserve its horizontal position. On the card are marked the four cardinal points, with their twenty-eight subdivisions. The compass is read with reference to a mark on the bowl, or box, which represents the ship's head. To "box the compass" is to name its thirty-two points in their order.



Mariner's Compass in Gimbals

The compass needle does not point exactly north and south. At different localities it varies from a few minutes of arc to ninety degrees. These variations are known and tabulated, and allowances for errors are easily made. The illustration represents the modern improved compass.

The Chinese were familiar with the properties of lodestone from very early times, but the magnetic needle did not become known to European navigators until the fourteenth century. The historic voyages of discovery were made possible by it, and soon followed.

The **ship chronometer** is an instrument for keeping time with great accuracy. It is especially helpful in the calculation of longitude at sea, and has contributed greatly to the precision and safety of navigation.

For the convenience of navigators, longitude is now quite commonly estimated from 0° to 360° E., instead of 180° E. or W.

Every commercial nation publishes *charts of navigation*, called coast-survey or admiralty charts, on which dangers to navigation are marked for the guidance of shipmasters.

On the coasts of nearly every country *lighthouses* are maintained at dangerous points, and as guides to navigation, while harbor channels are marked by beacons and buoys. On the coasts and waters of the United States are more than 2000 lights and beacons, twice as many fog-horns, buoys, and bells, and more than 200 life-saving stations.

Hardly less important to the extension of ocean traffic than the application of steam-power to navigation was the invention of the **screw-propeller**. For sea-going ships it is greatly superior to the side-wheel, which it has wholly superseded in the ocean carrying trade of the world. It is also largely used on inland waters. The screw-propeller was invented by Captain John Ericsson, in 1837.

John Ericsson

INTERCHANGE OF INTELLIGENCE. — Commerce derives efficient help from the ease, cheapness, and rapidity with which those engaged in it can communicate with one another. The three great agencies for this purpose are the *post-office*, the *telegraph*, and the *telephone.*

The Post-Office. — The carriage and distribution of letters by government began early in the last century to take on something of the form it has now. In America, the system owes much to the practical talents of Benjamin Franklin, who was for many years postmaster-general of the colonies.

The growth of the postal system in all countries has kept pace with the spread of civilization; in fact, the post-office, by distributing newspapers and printed literature of all kinds, has itself been a powerful civilizing agency.

The low postage rates for printed matter (these rates being uniform irrespective of distance) have made the whole of our own country an accessible market for literary wares. This in turn has stimulated book-making and cheapened books.

It would be difficult to overestimate the industrial and commercial importance of the post-office system. Every manufacturer, merchant, and tradesman avails himself of it as naturally as of the labor of his own employees. The railway mail service, the special delivery system, and the money-order department have become prime essentials of business life.

Two features of the postal system that are now indispensable parts of it — the uniformity of rates and the use of adhesive stamps — were not introduced until the year 1840.

In all countries the post-office is a government establishment. For the safe and speedy carriage of mails between country and country, the *International Postal Union* was organized in 1874. It now includes all civilized nations, and letters and packages are sent from one country to another with security and despatch. The transit charges are in all cases borne by the country from which the mails are sent.

A *Postal Congress* meets from time to time to admit new members to the International Union, and to regulate and improve its affairs. It is probable that a postal exchange wholly free from charge for the carriage of mails as between country and country will eventually be established.

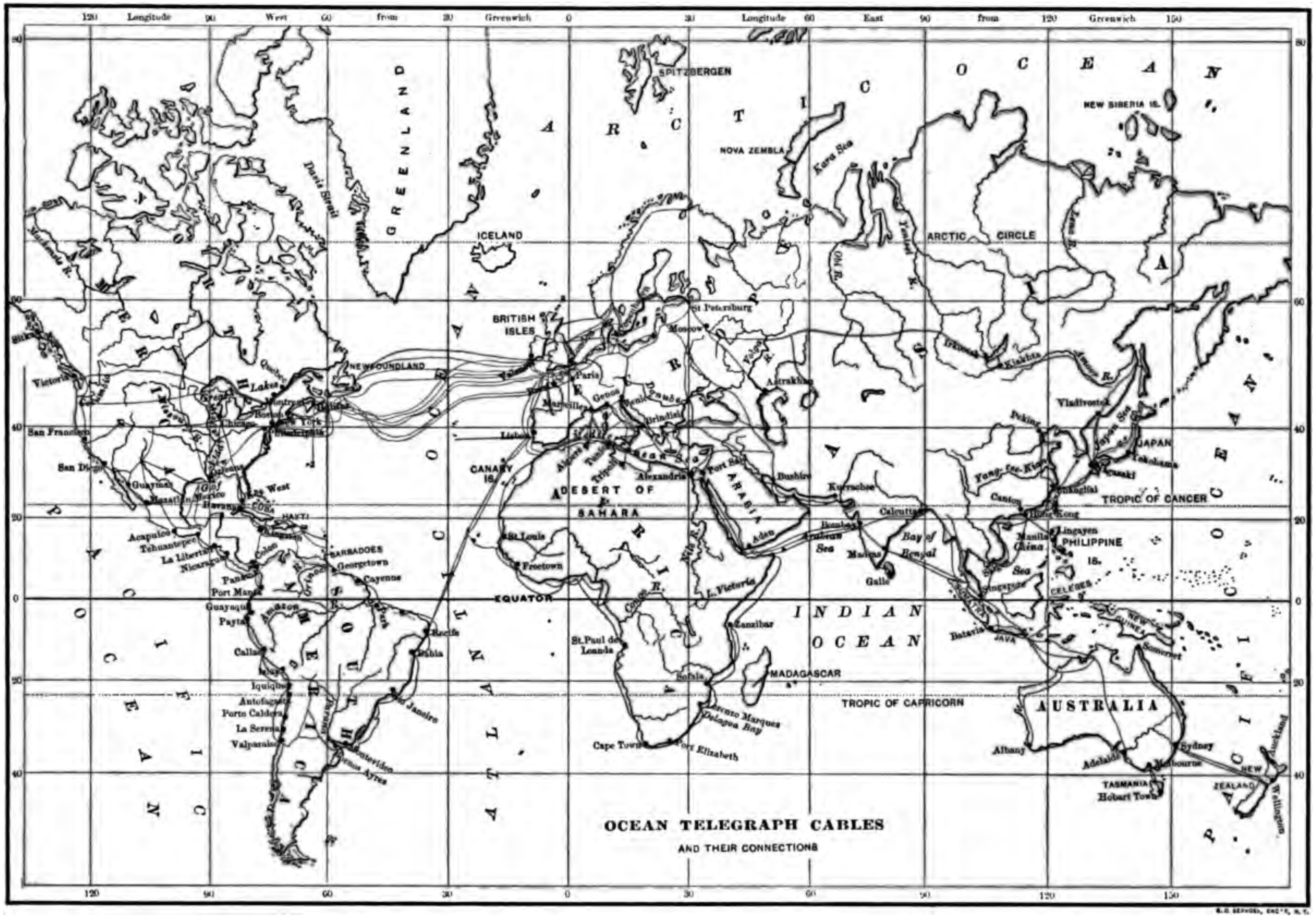
The Telegraph. — The telegraph was invented by our countryman Morse, in the year 1835, though not put into operation till nine years later. The first line built and used was between Baltimore and Washington, in 1844. The instrument and the code of signals devised by Morse are, with some modifications and improvements, still in general use.

As a result of the multiplication of lines and the reduction of rates, the telegraph is now commonly resorted to in business matters where the *saving of time* is important. There are more than two million miles of telegraph lines in the world; about one-third of the total being in our own country.

After the great usefulness of the telegraph had been demonstrated, several attempts were made to lay an *ocean cable* between the Old World and the New, across the bed of the Atlantic. This was first accomplished in 1858.

The *commercial advantages* of the submarine telegraph are so great that the system has been extended to all parts of the world. There are now several cables between Europe and America, and every country and colony of commercial consequence is connected with the rest of the world by ocean cables and overland routes. The accompanying chart shows the cable lines and their principal overland connections. There is no trans-Pacific line. More than a hundred thousand miles of submarine cable have been laid, at a cost of about a thousand dollars per mile.

As a means of economy in sending cable messages, so-called *cable codes* have been devised.



OCEAN TELEGRAPH CABLES

AND THEIR CONNECTIONS

[illegible], ENG'R, N. Y.

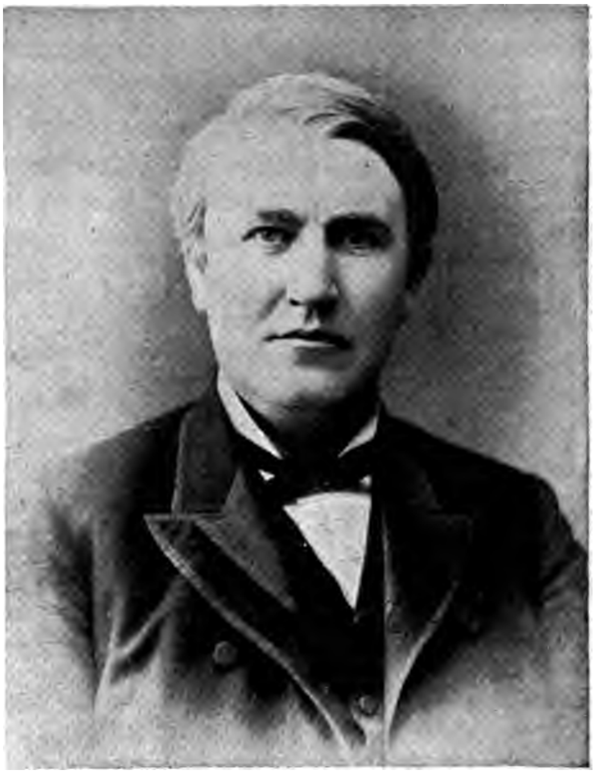
The object of these is to convey in a few words as much information as possible. Without this saving of words the cost of cable despatches would be far greater than it is.

To show how one word is thus used to represent many, a short extract is here given from the code employed by a banking-house of New York: —

Arrived well; pleasant trip; was not sick	Aberrance
Arrived well: stormy trip; was very sick	Abettor
Arrived well: stormy trip; was not sick; proceed to-morrow	Abigail
No cablegram received	Abjurer
Your cablegram is unintelligible	Abnegator
What is the cause of delay	Abolisher
No information has been received	Absorb
Cannot leave in consequence of	Abstinent
Have you received my letter	Abusive
Letter will contain further particulars	Abutment
How shall we direct your letters	Acacia
Procure letter of credit and send to me at	Accession
Have you received remittance	Accordant
Cannot return until	Accrue
When do you expect to return	Acetate
Write without delay	Acorn
Will write by next mail	Aconite

Second in value only to Morse's original invention is the *quadruplex telegraph*. By means of this invention four messages — two in each direction — can be sent over one wire at the same time. One wire is thus made sufficient for work that had formerly required four wires, and an enormous saving is thus effected. The quadruplex telegraph was invented by another distinguished American, Thomas A. Edison.

The Telephone is a device for transmitting by wire over an electric circuit, and accurately reproducing at any desired place, the vibrations of the voice. No special training is necessary for the use of this instrument, and its wires connect the house with the shop, the office with the factory, and agent with principal. By its help question and answer are exchanged between distant points as freely and promptly as in ordinary conversation. Propositions can be made and *discussed* in a manner quite impossible by telegraph.



Thomas A. Edison

Every important town has a telephone "exchange," or central office, to which all local wires run, and the exchanges of cities are connected one with another by *long-distance* telephone lines. There are already "talking-wires" between places many hundreds of miles apart, as, for example, between Paris and Marseilles, 500 miles, and between New York and Chicago, nearly 1000 miles.

In 1890 there were 240,000 miles of wire for telephone use in the United States, connecting 460,000 telephones and transmitters with more than 1200 "exchanges." In the same year the number of telephone conversations held was 450 millions.

The telephone was invented in 1875 by Alexander G. Bell of Boston. It owes important improvements to Edison.

THE MAINSPRING OF EXCHANGE. — It often happens that things can be produced so easily, and in such large quantities, in one place as to be very cheap there, while at the same time they may be in great demand and have therefore much value in other places. All commerce owes its existence to the fact that the products transported are worth more at the places they are carried to than at the places where they are produced.

The exports of a country, therefore, always consist of the things it can produce to advantage and beyond its own needs; while, on the other hand, the imports of a country consist of such commodities as it can buy cheaper than it can produce, or of such as it cannot produce at all.

Thus the republic of Brazil sends us coffee and rubber, which are produced freely in that country, but not at all in ours; taking from us in exchange manufactured goods that the people of Brazil lack capital, skilled labor, and established facilities for making, but which we can produce in quantities greatly in excess of our own wants.

The exchanges of domestic trade are governed by the same general law. There is a continuous radiation of commodities from places where they are produced in abundance, to the many places where they are needed for consumption.

In countries where the occupations of the people are diversified, this movement of goods commonly takes a twofold form. The raw product goes first from the region where it is produced to the great industrial centers, and from these, after it has been worked up into finished forms, it is distributed in all directions.

Thus, in the United States, wheat goes in bulk from the prairie farms of the Northwest to the great milling centers, to be shipped thence in all directions in the form of flour. Hides, from the Plains, are made into footwear in the towns of eastern Massachusetts, and are thence distributed broadcast in the form of boots and shoes.

TRADE CENTERS. — In the world of business, producer and consumer do not often deal with each other directly. The services of middlemen are needed, and the convenience of all has led to the establishment, at favorable points, of depots of exchange. Such trade centers are often centers of manufactures as well, where raw materials are converted into finished products at the market for both.

Every town is a trade center for the country round about it. It affords a market for the produce of the farmer, and is a storehouse of all the goods he needs to purchase. Where circumstances have specially favored it, some towns have outgrown their neighbors and become trade centers of far more than local consequence

It will generally be found that the great commercial cities of the world possess *natural advantages of situation*, either on good harbors, or at the head of river navigation, or in the vicinity of rich mineral deposits, or at points where great water-powers are available. Sometimes such cities have grown up at convenient points on railway routes, at canal termini, or at places where railways and waterways meet. And it will often happen that two or more of these advantages have contributed to the growth of the same city. Thus Liverpool, one of the most flourishing commercial centers in the world, is a seaport, and railway and canal terminus, while near by are very rich deposits of coal and iron, the two minerals most useful to man. Thus, also, Pittsburg, situated in the heart of a rich coal, petroleum, and natural gas region, is a busy river port and railway center.

FAIRS. — The name **fair** used to be given to the more or less regular meetings of buyers and sellers in market towns, and market-day and fair-day are still in many places interchangeable terms. In the United States, however, the word "fair" has come to have a different meaning. Our numerous state and county fairs are *industrial exhibitions*, generally competitive, displaying the various products of the region in which they are held.

In some countries, and in particular localities, fairs have become trade centers of national, and even international, importance. An instance of this is found in the great annual fair held at Nijni Novgorod, in Russia, where in six weeks of each autumn the trade exchanges aggregate $300,000,000. Fairs of this kind are simply great *temporary market-places.*

Wholly different, in purpose and in results, are the international, or World's Fairs, which have followed fast upon each other since the London Exhibition of 1851. By way of rough illustration, we may say that the World's Fair is an attempt to do for all nations what one of our state fairs does for the smaller communities within its borders. It is *an exhibition, not a market.* In it are shown all works of art, all gifts of nature, all products of industry, and all the newest mechanisms and processes.

Thus far, the greatest international exhibitions of a *general* character have been held at New York in 1853, Paris in 1867, Vienna in 1873, Philadelphia in 1876, Paris in 1890, and Chicago in 1893. There have also been some international exhibitions of a *particular* nature, as of the fisheries at Boulogne in 1865, of agricultural machines and implements at Paris in 1875, and of the applications of electricity at Paris in 1876.

The display of the latest mechanical devices is a striking feature of these great exhibitions, and it is noteworthy that many of the **labor-saving inventions** of recent times have been made by Americans. In the case of the sewing-machine, for example, every one of its inventors and improvers — Howe, Hunt, Wilson, Grover, and Gibbs — was an American.

Elias Howe

Several modern inventions have had a world-wide influence on industries and trade. The telegraph and the screw-propeller have already been referred to; one other invention is especially deserving of mention. The *cotton-gin*, devised just a century ago by Eli Whitney, cheapened the process of separating the seeds of the cotton-plant from its fiber, and thus made profitable the cultivation of cotton upon a large scale. This invention has profoundly affected the industries of the Southern

States and the commerce of the world. Our export of raw cotton in 1792, the year of Whitney's patent, was only 70 tons. In 1800 it had reached 9000 tons, and it is now more than 1,000,000 tons a year.

Commercial Geography treats of the natural resources and productions of the Earth, of the distribution of products, of routes of commerce, and of markets and manufactures.

It therefore includes the consideration of all the arts and processes by which the products of nature are made suitable for man's use — a branch of study which may be called **Industrial Geography**.

The dependence of both commerce and the industries on **Physical Geography** is obvious. Diversities of climate and of soil, the location of mineral deposits, of natural harbors, and of water-courses, determine for man the general nature and extent of his activities.

In some degree these natural causes are modified in their influence by such works of man as the railway and the canal. The growth and importance of the city of New York have resulted chiefly from its natural advantages, while Chicago, partly from physical situation, but very largely from the labors of man, has become the metropolis of the North Central States.

So, also, the production and exchange of commodities are affected by the nature and acts of government, by national boundaries, and by other conditions commonly grouped under the name of **Political Geography**.

Eli Whitney, Inventor of the Cotton-Gin

CHAPTER II

INDUSTRIES AND COMMERCE — HISTORIC OUTLINE

COMMERCE had its crude beginnings in Asia in prehistoric times; thence it slowly extended throughout the countries bordering on the Mediterranean Sea; from them to the rest of Europe; and in the last four centuries it has spread over the New World, as this has become populated by nations of European descent. Thus also the industrial civilization which has grown with the growth of trade has steadily **taken its way westward**, completing in recent times and in our own land the circuit of the globe.

1. INDUSTRIES AND TRADE OF THE ANCIENTS. — When men began to dwell together in villages, exchanges of some sort must inevitably have come about. The rudest and earliest form of trade consists of simple **barter,** — the exchange of the surplus products of one family or hamlet for those of another.

With increase of population and social intercourse a tendency arises for each man to devote himself to the production of one thing, or of a few things, instead of trying to produce everything he needs. Let us say that owing either to special training or to the nature and situation of the soil he lives on, a man can raise corn to great advantage. One of his neighbors may be better situated to raise cattle; while a third, raising neither corn nor cattle, may be skilled in the weaving of cloth. Thus one man produces vegetable food, another animal food, and the third the covering necessary to protect the body from the elements, and each of these men is benefited by the barter with his neighbors which naturally follows.

The various simpler "trades" could not have been established without this specializing of work. Practice makes perfect, and only by the **division of labor** can great excellence be reached in any handicraft, art, or science. Under the influence of this principle the whole fabric of modern industry has been built up.

The **river-valleys** of southern and southeastern Asia, and the basin of the Nile, were probably the sites of the first considerable towns of the Eastern Continent. On the fertile lands watered by these navigable rivers, men soon found how wonderfully the common advantage could be served by mutual helps. The industrial association thus begun had in itself the germ of progress, and spread by slow degrees over all the Eastern world. The Euphrates, the Tigris, and the Nile valleys became the seats of empires, and were to ancient nations what the Mississippi and Great Lake basins are to the people of our own country.

The aborigines of Mexico and Peru had probably made considerable material progress before the beginning of the Christian era. The Spanish invaders found them skilled in metal-working and in the making of pottery; they irrigated the rainless soil, made excellent roads, and built houses of hewn stone. Yet modern industrial life would still be what it is if these ancient Americans had never existed. Our civilization, in which the useful arts play so great a part, is an outgrowth and continuation of the civilization of the Old World.

For long ages the traffic of the ancients, whether from town to town or between different countries, must have been carried on either by the help of navigable rivers, or overland by means of beasts of burden. To the merchants of antiquity the great ocean seemed a barrier, not a help, to commercial undertakings.

With the **inland seas** the case was different. The Mediterranean in particular, whose borders are so largely peninsular in form, must in very early times have tempted to trading ventures the vigorous and progressive races settled upon its shores.

It is probable that the first great maritime carriers of goods were **the Phœnicians**, who inhabited the coast country of Syria, at the eastern extremity of this midland sea. Tyre and Sidon were their chief cities. Weaving, embroidering, purple-dyeing, and the making of glassware seem to have been important industries among them, but it is as navigators and traders that this people are most famous.

From the earliest times they distributed to the rest of the world the wares of Egypt and Babylon. The situation of their country directly tended to give to the Phœnicians the control of early Mediterranean trade. The grain and ivory of the Nile region, and the silks, dyes, and spices of Asia flowed into their hands. The Phœnicians traded to every part of the Mediterranean coast, making many settlements, and founding several important colonies.

Of these, **Carthage** was the greatest and most celebrated, and after the downfall of Tyre the Carthaginians became, in turn, the controlling power in Mediterranean waters. They built Carthagena and Barcelona in Spain, and passing the "Pillars of Hercules" (as the ancients styled the eminences at the Strait of Gibraltar), established the port of Cadiz, and trading-stations on the Atlantic shores of Gaul.

The discovery of numerous Carthaginian coins in the Azores leaves little room to doubt that these western islands were visited by the boldest of ancient voyagers.

The Carthaginians found in Spain much silver and iron, and some gold, besides fine wool, a product for which that country has always been famous. They got tin from the Scilly Islands, and perhaps from Cornwall. From the lands bordering on the Baltic Sea they imported amber, copper, and furs. In exchange for all these the Carthaginian merchants sent out ornaments, bronze work, and other metal wares, besides silk, cotton, and woolen fabrics, dyed in the far-famed "Tyrian purple."

Carthage was settled in the ninth century B.C. For nearly 500 years her power by sea was supreme, but in the third century began her long wars with Rome, ending in the year 146 with the total destruction of the African city.

The Greeks had never been so active in commerce as were the Carthaginians, but on the other hand they were the greatest *colonizers* among the nations of antiquity. Long before Carthage had reached her highest renown the Greeks had founded scores of coast cities, some of which, like **Marseilles**, **Naples**, and **Smyrna**, are to this day busy centers of commercial life. A few trading settlements also were made at points advantageous for Grecian commerce, as at the mouth of the Danube and in the delta of the Nile.

The Greeks imported hides and timber from the Black Sea region, ivory and grain from Egypt, and spices and wool from their colonies in Asia Minor.

Among the few handicrafts practiced in ancient Greece were the weaving and dyeing of cotton and wool, metal-working, especially in bronze, and the making of earthenware.

After the overthrow of their power by the Macedonians, and while Carthage was in her decline, *Alexandria* was for two centuries the commercial metropolis of the world.

About a hundred years before the commencement of our era, **Rome** had grown to supreme military power. The genius of her people was political rather than commercial. The Romans were, first of all, conquerors and law-givers; yet the industries necessary to the prosperity of a great population had not failed to develop themselves in Italy, and as the sway of Rome extended over remote regions, it was her policy to adopt and promote whatever of commerce she found existing in them.

All the more was this needful because the food supply of Italy had largely to be imported. The tribute levied on the conquered provinces of the Roman empire was really paid in the products of those provinces.

From western Europe she received grain, cattle, fruits, and fish, besides salt, tin, lead, iron, and copper. The leading imports *from the East* were metal goods, glassware, and marble; grain, fruits, and spices; carpets, dyes, and fabrics of wool and silk.

The **slave-trade** was everywhere active in the ancient world, and from all parts of it slaves in great numbers were brought to the Roman market.

Among the *manufactures* of ancient Italy, those of cloth, paper, glass, and earthenware were well established. In Rome itself thousands of artisans were busied in making and finishing articles of luxury for the wealthy patrician class. Italy, however, was not a manufacturing country, and her export trade was small.

The Roman Roads. — The Romans were the greatest road-makers of ancient times. In solidity of construction, their highways have never been excelled, and some of them are still in use.

The Roman "ways" extended from the capital city to all the large towns of the empire, and were remarkable for preserving a straight course from point to point. These roads were built mainly for military purposes, but they formed commercial routes of the highest value in an age when maritime traffic was yet in its infancy.

2. MEDIEVAL COMMERCE.—When, in the fourth and fifth centuries, the peoples of north-eastern Europe overran the Roman empire, such commerce as had grown up in the ancient world fell into complete decay; for in that vast and irresistible trespass, **the sense of security**, on which commerce and the industries that support it always depend, was quite extinguished. For several centuries there was not in all Europe anything that we should call business life.

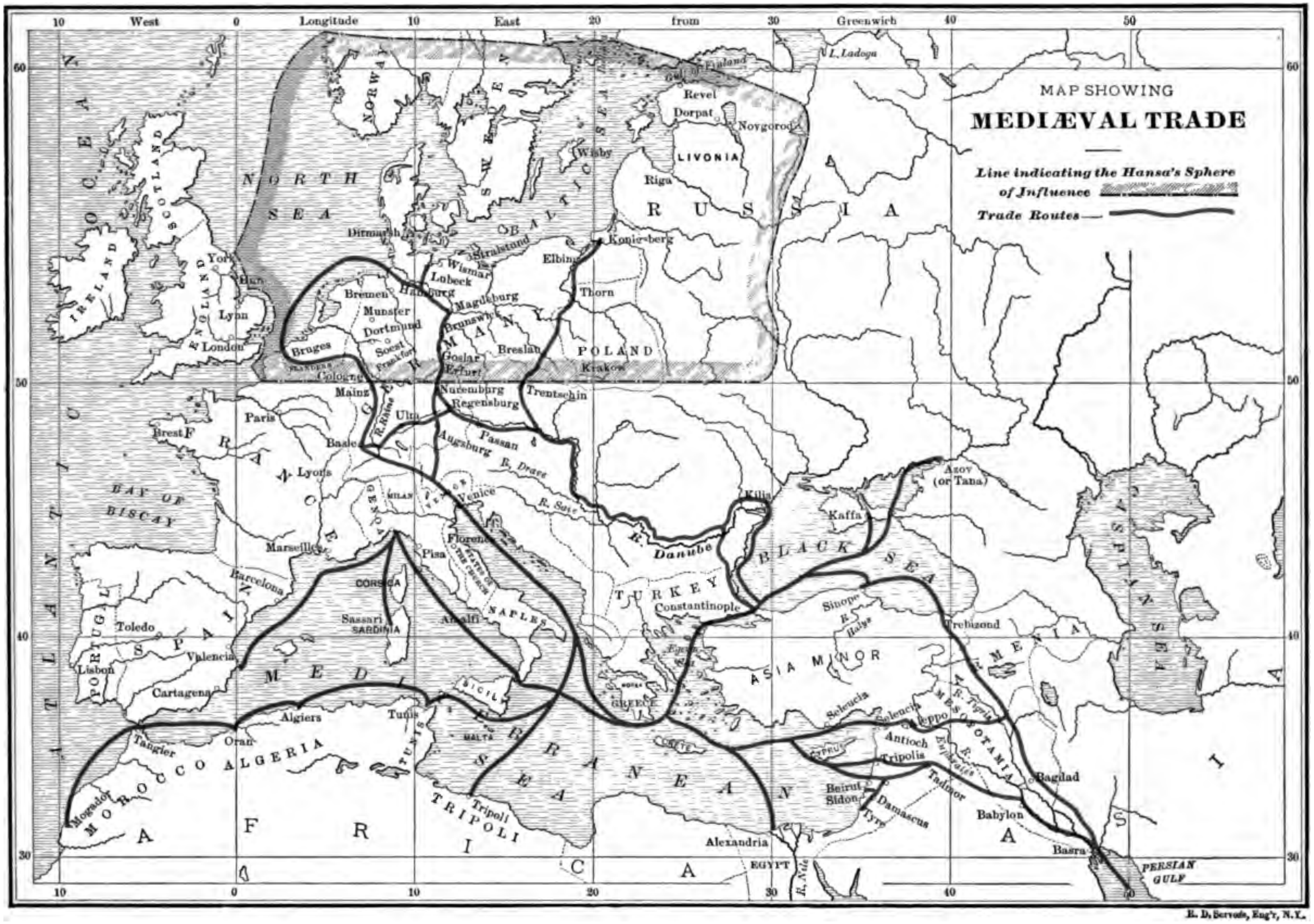
But at length out of this chaos civilization slowly emerged. The northern nations had been Christianized, and the countries of the south had absorbed and assimilated the invading populations.

Early in the thirteenth century several German towns formed a *hanse*, or league, for mutual benefit and protection. This commercial confederation lasted for nearly four hundred years. It is commonly spoken of as **the Hanseatic League,** and at one time was composed of more than eighty towns. Hamburg, Lübeck, and Bremen, in close proximity to one another, and favorably situated for sea and river trade, were the chief cities of the League.

The Hanse towns conducted **the trade of northern Europe.** They established their own warehouses and commercial agents as far west as London, and as far east as Upper Novgorod, near the site of the modern city of St. Petersburg.

From England and the Netherlands the Hanse traders brought linen, wool, tin, hides, and salted fish. From the Baltic countries they got grain, iron, copper, timber, and furs. From southern and southwestern Europe they imported wine, oil, salt, and silk.

Great quantities of woolens were then made in England, linen and woolen goods in the Lowlands, and silks in France, Spain, and Italy.



MAP SHOWING

MEDIÆVAL TRADE

Line indicating the Hansa's Sphere of Influence ▨

Trade Routes —

E. D. Servoss, Eng'r, N.Y.

The **commerce of southern Europe** first revived in the seaports of Italy. During the Middle Ages the course of trade with the Orient lay through Mediterranean waters, and thence overland either to the Red Sea or to the Persian Gulf (see *map*). Italian merchants traded also to many ports on the western coast of Europe. The mariner had then no compass, and seldom ventured far out of sight of land.

The Italian cities, especially **Venice** and **Genoa,** profited greatly by the carrying-trade, both of men and of supplies, which was created by the crusaders. It is said that the merchant-marine of Venice alone consisted in the fourteenth century of no less than 3000 ships.

The chief items of *manufactures* of Venice and Genoa were fabrics of wool, cotton, and silk. The great inland cities of Milan and Florence were famous for their silk goods and jewelry. They produced also much of the defensive armor worn in the wars of that time.

Constantinople in the east, and **Marseilles** and **Barcelona** in the west, were busy commercial ports in the Middle Ages. Considerable overland traffic between the Mediterranean countries and those bordering on the North and Baltic seas was carried on through the passes of the Alps and by way of the river Rhine.

3. COMMERCE OF MODERN EUROPE.— When in 1453 Constantinople was captured by the Turks, trade with the East was almost entirely cut off. In 1497 Vasco da Gama discovered the easier and safer **sea-route around Africa** to India and China. Five years earlier Columbus had found the "West" Indies. As a result of these remarkable events the greater part of maritime trade was shifted **from Mediterranean to Atlantic waters.**

Ocean commerce had now begun. Its progress, however, was at first very slow. Throughout the Middle Ages trade of every kind had been too much disturbed and hindered by wars and tumults to exert its full influence upon society. The European mind was unprepared to take in at once the momentous import of the new discoveries. Thus, for more than a century after the voyages of Columbus, what is now our own country was still a wilderness thinly peopled by savage tribes.

The Spanish colonization of South America was greatly stimulated by the discovery of its **mines of gold and silver,** all the more because there was then great scarcity of the precious metals in Europe. With the East Indies, trade could now be carried on **without transshipment** of goods, and without the hindrances and the heavy costs that had formerly been imposed by the Arabs for overland carriage.

In the sixteenth century, the East Indian trade was far more valuable than that with America. Asia was well peopled by industrial nations whose products had long been familiar and highly prized in European markets, while America was almost a solitude, though one of inexhaustible natural resources.

An era of **shipbuilding, exploration,** and **colonization** began. Great seaports, like Antwerp and London, grew up on the Atlantic coast of Europe. Industries whose products were available for the new commerce became especially active.

For three-quarters of a century — from 1500 to 1579 — *Antwerp* enjoyed very great prosperity. To her annual fairs came traders from all the cities of Europe, and the river Scheldt was often lined for miles with merchant fleets. In the seventeenth century *Amsterdam*, *Flushing*, and other ports of Holland, were busy centers of commerce with the Indies, both East and West.

The Portuguese planted settlements for trading purposes in Brazil, on the coast of Africa, and in the Indian Archipelago. Later **the French** founded colonies on the St. Lawrence and the Mississippi.

The Dutch established others in the East Indies and at New York. **The English** settled the eastern shores of North America, and gained a foothold on the peninsula of Hindostan.

In three centuries European colonies were planted on every coast. Remote seas, subdued by the progress of navigation to the service of man, began to yield their own riches in great abundance. The threads of commerce were weaving together the interests of all nations, and extending a security unknown in former ages.

In our own time the discoveries of gold in California and Australia, the application of steam-power to navigation and overland carriage, and the invention of the telegraph, have revolutionized the commerce and industries of the world. Thus, **western Europe** has now become **a region of manufactures**, dependent for the materials of food and clothing on imports from the other continents. A great merchant-marine for conducting international exchanges is therefore a necessity to European life.

The vast benefits which steam locomotion and the electric telegraph have conferred on the world's business are too obvious to require illustration. It is well, however, to note that the advantages resulting from the great gold discoveries have mainly accrued *to the nations within whose territory the gold deposits were found*. These advantages were of two kinds: —

1. The increased supply of gold temporarily lessened the value of that metal, and, for the time, correspondingly increased the prices of other commodities, together with the wages of labor engaged in producing them.
2. Ever since these discoveries, England and the United States have been exchanging their new gold for the useful products of other countries, and have to this extent increased their own real wealth.

The principal European countries, in the order of the **amount of their merchant tonnage**, are Great Britain, Norway-Sweden, Germany, France, and Italy.

Arranged in the order of the **value of their commerce**, they are Great Britain, France, Germany, Belgium, and the Netherlands.

It will be seen that Great Britain leads in both tonnage and commerce. No other country is so favorably situated for the control of European trade. A hemispherical map, so drawn as to include the great commercial countries of the world, would show London at its center.

The greatest **manufacturing cities** of Europe at the present day are those of greatest population, — London, Paris, and Berlin.

The greatest **commercial ports** are London, Liverpool, Hamburg, and Marseilles.

Within recent years the Mediterranean Sea has been restored to more than its old importance, as a trade-route between Europe and the East, by the opening of **the Suez Canal**.

NOTE. — What the nations of Europe buy and sell, and with what other nations they carry on commerce, will be fully shown in later chapters.

4. COMMERCE OF THE UNITED STATES. — The European colonists that inhabited our Atlantic coast plain at the close of the first century after the settlement were less than half a million in number. They formed, that is, a population about equal to that of Boston or St. Louis at the present day.

To subdue a wilderness and fit it for **agriculture** was the chief business of these pioneers of western civilization. They had neither the time nor the facilities to engage systematically in the useful arts, and accordingly some of the necessaries and most of the conveniences of life they imported from the mother country.

To pay for these imports the colonists sent back to England such natural products as **tobacco, rice, furs, pitch, tar**, and **iron ore.**

Manufactures, in our sense of the term, and on a large scale, did not become developed till after the close of the colonial period in 1776.

Since the introduction of machinery into factory work, the word *manufacture* has come to signify the reverse of its original meaning of "handmaking." It now denotes mechanical production, with little or no aid from the human hand. In fact, the most nearly perfect "manufacture" is that which dispenses the most with manual labor.

Yet here and there, as we learn from early chronicles, some factory industries appeared. In New England, especially, the rigorous climate and thinner soil discouraged agriculture, and turned men's energies in the direction of trade and manufactures. The **building of ships** served both of these interests, and was, therefore, from the first, an active industry in the coast and river towns.

The sailing-vessels of Massachusetts were busy in the fisheries and the coasting trade. They brought *rum* and *sugar* from the West Indies in exchange for cargoes of *lumber* and *grain*. Besides this, in all the northeastern harbors, many ships were built for sale to English and other traders.

Paper-mills were set up in Massachusetts and Connecticut, as well as in New Jersey, Pennsylvania, and Delaware. In almost all the colonies, woolen mills were gradually established. By the middle of the last century our forefathers had some manufactures of **ironware, pottery,** and **glass, paper, leather, woolen, bricks,** and **cordage.**

All these industries were looked upon with great disfavor by English merchants and manufacturers, who naturally wished to keep for themselves a monopoly of the American market. As early as 1651 Parliament had forbidden the colonists to trade with any other country than Great Britain, and in the first years of the eighteenth century other laws were passed, prohibiting American manufactures, especially of iron, wool, paper, hats, and leather. These laws were systematically evaded, and most of the colonial traders became smugglers.

In the third quarter of the last century the American people, more than two millions in number, had come to realize that all these English enactments invaded their property rights. They remonstrated by memorials, and appealed by agents, but to no effect. The mutual irritation increased, neither party to the disputes would recede, and the War for Independence ensued.

During the Revolutionary struggle those industries whose products were called for by the necessities of the war became very active. But with the peace came a reaction; **finished products were again imported, and domestic manufactures fell off,** though shipbuilding and the carrying-trade revived.

The Articles of Confederation did not provide for the regulation of commerce. Each state had its own tariff and managed its own trade. The formation of a stable government, however, by the adoption of the Constitution in 1789, gave to Congress the power to legislate on commercial affairs. These at once assumed a new aspect. **Manufactures,** especially of woolen, linen, leather, iron, glass, and paper, were now, for the first time, **generally and actively pursued.**

Throughout the next twenty years, except for the brief period of the Embargo of 1807, the carrying-trade and the factory industries of the United States were mainly prosperous. The almost continual wars which devastated Europe until the battle of Waterloo in 1815 threw much of the world's ocean carriage into the hands of American sailors. Our industrial progress was especially furthered by **the great mechanical inventions** which in 1780–1790 had been perfected in England. Hargreaves had invented the spinning-jenny, Arkwright the water-frame, Crompton the mule-jenny, and Cartwright the power-loom.

Steam-power was now being applied to the driving of machinery of all kinds. Coal for use under steam-boilers, and iron for the making of machinery, were imperatively needed. The safety-lamp and the steam-pump had made possible **the mining of coal and iron on an extensive scale.**

Though Parliament strictly prohibited the exportation of any textile machinery from the kingdom, all efforts to monopolize the benefits of the new inventions proved futile.

In 1789 a young Englishman, Samuel Slater by name, who had been employed by Arkwright, and was familiar with every detail of the cotton-spinning industry, came to this country. Settling in Rhode Island, he constructed, principally with his own hands, the whole series of new cotton-machines, and in 1793 established with others a cotton factory in that state.

The only thing then wanting to insure the rapid growth of cotton manufactures was an **abundant supply of the fiber** at a cheap rate. This, the contemporaneous invention of the cotton-engine, or "gin," by Eli Whitney, at once supplied.

In about ten years there were 30,000 spindles in operation in the United States; in 1830, a million and a quarter; and there are now more than ten times that number.

Manufactures of *leather*, *iron*, *wool*, *paper*, and *glass* were sufficiently developed in the early part of this century not only to supply all the needs of our own population, but to allow of some export.

The second war with Great Britain closely resembled the Revolution in its influence on American industries and trade. It increased the demand for domestic products, because foreign imports and competition were cut off. While the war lasted, **home manufactures were therefore stimulated,** and after the peace they continued in a prosperous condition.

To the mechanics and laborers of crowded Europe, America held out tempting advantages, and in 1820 about 8000 of them sought homes in the New World. Those who had been employed in factories abroad found employment in similar factories here; but the majority were tillers of the soil, and these newcomers, in their search for homes, pushed the frontiers of civilization westward.

The **water-powers** of nearly every stream in the North and East were brought into use for driving machinery; even large rivers were dammed to obtain power for the multitude of factories. Thus Holyoke, Lowell, Manchester, Lewiston, and other manufacturing cities were built up.

Bituminous coal had, even in colonial times, been mined in considerable quantities in the vicinity of Richmond in Virginia, and though it was known as early as 1770 that **anthracite coal** existed in Pennsylvania, it was not for many years thereafter believed that this mineral had much value. Hard coal began to be mined for the market about the year 1825.

Anthracite is pre-eminently fit for domestic uses and for iron-smelting. The deposits of it lie near to our densely populated seaboard, and the Atlantic States have long looked to it for their chief supplies of coal. It is *the fuel of manufacture* wherever in this region water-powers are not available. A vast iron-producing industry and great systems of railways have been called into existence by it.

With the European peace of 1815, **ocean commerce revived,** and various nations strove for supremacy in it. The Americans were masters of seamanship, and their disposition for trade kept their merchant fleets busy. Shipbuilders vied with one another in constructing vessels of great speed, and in 1860 the tonnage of the merchant-marine of the United States had become nearly equal to that of Great Britain. Many "clipper" ships belonged to this fleet. They were then the swiftest sailers ever built.

The Civil War in America (1861–1865) broke out at the critical time when **steam was superseding the sail,** and, while our commercial development was hindered by this war, the trading nations of

Europe were adding fleets of ocean steamships to their merchant-marine.

Another advance, almost as momentous in its influence upon navigation, was the change in **the material of shipbuilding**. The sailing-ship had been made of wood; the ocean steamship was now being made of iron.

Iron ships are more durable than those made of wood, and, being more rigid, can better bear the strain of heavy steam machinery. In fact, the screw-propeller has been found to be inapplicable to wooden ships of very large capacity. Moreover, iron ships draw less water, and have greater stowage capacity than wooden ships of the same tonnage.

The iron screw ship was first adopted in England in 1838. American shipbuilders are not yet able to compete with their British rivals in the construction of these vessels.

For many years the energies of the people of the United States have been devoted to developing the resources of the country, somewhat at the expense of the merchant-marine. Though our commerce steadily increases, our foreign carrying-trade has greatly fluctuated in amount, with a marked tendency to decline. In our **coast and inland commerce**, from which foreign ships are excluded, our carrying-trade has kept pace with the extraordinary growth of our domestic exchanges.

The following table shows the value of the foreign commerce of the United States, and the amount of American tonnage engaged in it for the five census years, 1850–1890: —

YEAR	IMPORTS AND EXPORTS OF MERCHANDISE	TONNAGE IN FOREIGN TRADE
1850	$ 317,885,252	1,439,694
1860	687,192,176	2,379,396
1870	828,730,176	1,448,846
1880	1,503,593,404	1,314,402
1890	1,647,139,093	928,062

The proper significations of the terms *merchant-marine*, *carrying-trade*, and *commerce* should be observed. It is common to infer from the phrase, "the decay of our merchant-marine," that the foreign commerce of the United States is declining. *Commerce* is the buying and selling of goods; the *carrying-trade* is simply the business of transporting them; the *merchant-marine* is the total shipping engaged in this freight business.

There are wide divergences of opinion in respect to the **importance of the carrying-trade**. Some maintain that we should do all in our power to gain control of it, at least so far as American commerce is concerned. It is urged that a great merchant-marine would be a training-school of sailors for naval service in time of possible war; that the carrying-trade is itself a very profitable business; and that we ought to be independent of foreign carriers.

There are, on the other hand, those who contend that our busy coasting and lake fleets are a sufficient nursery of seamen; that we may hire our freighting done for us with just such advantages as a merchant finds in sending his goods by express; and that there is sufficient competition for the carriage of our international exchanges of merchandise to prevent anything but reasonable charges for the service.

The Civil War of 1861–1865 was injurious to the commerce of our country, cutting off for the time **the natural export of cotton** and the other staples of the South, but, with the close of the conflict, this trade at once resumed its course. During the same four years, however, our Atlantic carrying-trade met reverses from which it has not recovered. Ocean ventures under our flag were hazardous for the time, and our carrying-trade fell mainly into British hands.

The last twenty years have witnessed the industrial development of the Southern States, the opening of the vast wheat-fields of the Northwest, a marvelous extension of the railway systems of the United States, and an immense increase in our coastwise and lake trade.

Two recent acts of Congress are of great importance, the one to our domestic trade, and the other to our foreign commerce.

1. The former of these is the **Interstate Commerce Act** of 1887. Under the Constitution, Congress has power "to regulate commerce *between the states*," and the purpose of this law is to cause railway companies which operate lines *in more than one state* to make equable and just rates for transporting goods. Local or individual discriminations on such roads are not now lawful. A Commission of three persons hears and tries complaints against any railway charged with disobeying the law.

2. **Treaties of commercial reciprocity** have recently been made with several foreign nations. In the winter of 1889–1890 an International Congress, composed of delegates from all the republics of the Western Continent, was held at Washington. This Congress directed special attention to the commerce between the United States and the countries to the south of us.

As a general statement, it may be said that we have bought of these countries more than they have bought from us. In other words, our exports to them have paid for only a part of our imports from them. The balance of payment has been made up of European merchandise, shipped to Mexico and Central and South America, which merchandise, in turn, has been paid for by exports from the United States to Europe. But these southern countries have taken manufactures freely from Europe, while we have sent to Europe agricultural products. We, therefore, in effect, have sent breadstuffs, cotton, and provisions to Europe to pay for millions of dollars' worth of imports into the United States from the countries south of us. The question, therefore, arose whether the payment could not be made in full, by exports of *manufactures to South America* instead of by exports of *farm produce to Europe*.

Treaties of mutual trade concessions were made in 1891 with **Brazil, Santo Domingo,** and **Spain.** The treaty with Spain related to our commerce with her former colonies, *Cuba* and *Porto Rico.* As these islands are no longer under Spanish rule, this treaty is not now in force with Spain. By the terms of these treaties, the raw products of these southern countries were admitted into the United States either duty free, or at reduced rates; while the manufactures of our own country are admitted into Brazil and Santo Domingo on similar favorable conditions.

Under the same act, an agreement has been entered into with the **German Empire,** by the terms of which American pork and agricultural products are received into Germany on favorable conditions, while we admit German beet-sugar free of duty.

NOTE. — An account of the industries, productions, and exchanges of the United States is given in the chapters which follow.

CHAPTER III

THE GREAT COMMERCIAL STAPLES

I. FOOD SUBSTANCES

THE **finished products** that men exchange with one another are as numerous and as varied in character as the tastes, desires, and needs of our race are diverse.

On the other hand, the staple **raw products,** though they make up the greater part of commercial exchanges, are comparatively few in number.

On some of these staples, especially on many of the materials of food and fuel, but little labor beyond that involved in transporting and selling them is expended before they are put to final use. Such commodities are steadily going from their fields of production *to regions of consumption.*

Others of these staples, such as the metallic ores and the raw materials of clothing, require working up, sometimes by a long series of processes, to fit them for use. Commodities of this nature flow constantly from their fields of production *to centers of manufacture.*

Neighborhood Trade. — Certain items of food are everywhere and constantly being supplied by farmers to town residents of the same neighborhood. Products like those of the garden and the dairy pass directly to consumers by a vast number of small sales. The aggregate value of these transactions is **greater than that of all other trade.** This part of the world's business is of a nature to escape observation and record, and none but a very general account of it can anywhere be given.

I. ANIMAL FOOD

1. BEEF AND BEEF PRODUCTS. — Of all animals, cattle are the most useful to man. On them living we depend for *dairy products*, and in many regions for the tillage of the soil. They serve man's needs even more when as *beeves* they have been fattened for food. Either "on the hoof," or dressed for the market, beef enters largely into general commerce. It is the **chief article of animal diet** among the progressive nations of the earth.

The ox is native to the Eastern Continent, where it has been domesticated from the remotest times. The earliest Spanish and English colonists in America brought cattle with them from Europe. These animals, however, were of poor stock, and in the English colonies the inferior grasses of the coast country tended to deteriorate them still further. Importations of finer animals began early in the present century, and have continued ever since. The cattle of South America and Australasia were, in like manner, introduced into those countries by European settlers.

In thickly peopled regions cattle are raised chiefly for **dairy purposes,** and for service as draught-animals. Such regions are the eastern half of the United States and the western countries of Europe. In two European countries, the Netherlands and Denmark, dairy cows are bred for export. These go mainly to England.

In the United States, dairy farming is very extensively pursued in the states that border on the Great Lakes. The number of milch cows, according to the census of 1890, was 16,000,000.

Cheese is the dairy product that is most important in commerce. It is made in great quantities in the Lake States, especially in the state of New York.

The export of American cheese in 1890 was valued at $8,000,000. It was sent mainly to Great Britain.

Fine grades of cheese are made in the Netherlands, France, and Switzerland. Of this, we buy about a million dollars' worth yearly.

Cattle Ranch, Colorado

Herding, or "ranching," names that are given to the raising of cattle in great numbers **for beef purposes**, can only be followed *in thinly populated regions* that are well watered, and provided with nutritious grasses. The principal cattle-grazing areas in the world are in North and South America. Smaller tracts devoted to this industry are in Australasia and British India.

The greater part of our beef supply, both for home consumption and for export, is derived from the states of the plateau that lies to the east of the Rocky Mountain range. This is the treeless, grassy region of the **Great Plains**, where tillage has not yet taken the place of pasturage.

The herds of this vast area are driven and transported to the chief **meat-packing centers**, Omaha, Kansas City, and Chicago. At these points the beef is dressed for market, and the hides become a commodity of trade.

The export of beef and of beeves is great and increasing. Most of the shipments are to Great Britain. The export of live cattle in 1890 was $31,000,000, and of beef $25,000,000, in value.

The transportation of fresh beef, like that of mutton and fruits, to distant points for consumption, though now a great business, has grown up within a very few years. Beef comes to the seaboard from the West in refrigerator cars, and is shipped abroad in iced chambers. In the same way, the fresh mutton of New Zealand is shipped to the London market, although the steamer-route for this traffic lies across the Tropics. Thus a valuable trade has been created simply by combining steam transport with artificial refrigeration.

The principal cattle-herds of South America graze upon the plains watered by the **Plate** and **Orinoco rivers**. The exports from these regions are mainly of hides to France, England, and the United States, although considerable quantities of salted and canned beef are sent to Europe from the Pampas country.

From beef fat, mixed with milk, and otherwise treated, an artificial butter called **oleomargarine** is made. In some of our large cities surplus milk is utilized in making this article. The first oily product from beef fat for the manufacture of this artificial butter is much more important as an export. It is shipped, to the annual value of about $6,000,000, to Germany and the Netherlands.

2. PORK AND PORK PRODUCTS. — The hog is easily reared, attains its full growth quickly, and yields a larger amount of flesh, in proportion to weight and the food consumed, than any other domestic animal.

Swine have always been a source of food-supply in Europe and Asia. Like cattle, they were unknown in America and Australasia till introduced by colonists from Europe.

The raising of swine and pork-packing and curing are greater industries in the United States than in any other country, and American pork is the best. The chief pork-producing states are Iowa, Illinois, Missouri, Ohio, Kansas, and Indiana. These are also corn-growing states, this grain being the most important item in the food of swine. Swine-raising, therefore, is **carried on upon farms** in well-settled regions, and could not profitably be pursued in the remoter areas where cattle-ranching thrives.

The great **pork-packing centers** are Chicago, St. Louis, Kansas City, and Cincinnati. The value of the exports of pork products — bacon, hams, pork, and lard — from the United States in 1890 was $85,000,000. These were sent mainly to Great Britain and Germany. Live hogs are not exported.

Although our foreign sales of pork products are much greater in amount than those of cattle and beef, yet the value of American cattle is more than double that of swine. This is because we consume at home a much larger proportion of our beef than of our pork. Pork is much the cheaper food, and is for that reason in great demand among the laboring classes of Europe.

3. FISH. — Fish are found in abundance in nearly all waters, salt and fresh. As is the case with other food substances that are freely yielded by nature, a considerable portion of the total fish-supply of the world enters at once into consumption. Only those fish that are derived in large quantities from certain prolific fields, and which are cured or canned for transportation to distant points, are of much commercial consequence.

The staple food-fish are **cod, mackerel, herring,** and **salmon**. Shell-fish are less perishable than the true fish, and are marketed in great quantities. *Oysters* and *salmon* are the most valuable canned fish. The young of herring, packed in oil and sold under the name of *sardines*, are also to be classed as canned goods.

The term "curing" covers the various processes of pickling, salting, and drying.

In the canning process, air is exhausted as far as possible from the articles to be preserved, and the cans are then sealed hermetically. This postpones decay for months or years. If the air could be wholly excluded from both can and contents, canned goods could be preserved from decay any length of time. Fresh fish, meats, fruits, and vegetables are now regularly supplied in cans at moderate cost, and at all seasons of the year.

Other fish of much importance are **halibut** and **haddock,** found on all the great "banks"; the **whitefish** of our northern lakes; the **sturgeon,** caught in great numbers in the rivers of southern Russia; and the **carp,** cultivated in ponds in Germany and China.

The *salt-water fisheries* of very great value are few in number: —

1. **The Banks,** a great area covered with shoal water off the coasts of Newfoundland and Nova Scotia, are the most prolific fishing-grounds in the world. They are yearly visited for *cod* and *halibut* by about 5000 vessels from the United States, Canada, and Europe. The largest fleets of these vessels hail from Maine, Massachusetts, and New York.

2. The fishing-banks next in productiveness are those of the **North Sea.** These are visited for *cod* and *herring* by the fishermen of Norway, France, the Netherlands, and Great Britain.

3. There are extensive fishing-grounds along the **coasts of Washington** and **Vancouver Island,** at points easily accessible from Puget Sound. These grounds abound in *cod* and *halibut,* and are resorted to by vessels from British Columbia and our Pacific ports.

Mackerel are caught in the shore fisheries of the New England States. *Shad* and *salmon* are salt-water fish that run into fresh water to spawn. Shad-fishing in the rivers of the Atlantic slope, and the catching of salmon in the Columbia River and the rivers of Alaska, are important industries. Of these, the salmon fisheries alone have more than a local importance.

4. The most extensive **shell-fish beds** in the world are in the coast waters of the United States. Chesapeake Bay and the Virginia shores are the principal seats of oyster-dredging. The beds of this area are natural ones. Artificial beds have been planted on the coasts of New England, Long Island, and New Jersey, and these are now second in value to the Chesapeake beds.

The fisheries of the United States give employment to 150,000 men, and supply an estimated annual product $50,000,000 in value. The fish export of 1890 amounted to $6,000,000, more than half of this being canned salmon.

Fish culture is now carried on systematically by the United States and Germany. Valuable food fish from one part of the world have been transported to other parts, and propagated in new or exhausted fishing-grounds.

The Great Lakes have been stocked with whitefish, and many rivers with salmon. Shad have been introduced into the rivers of the Pacific slope, and the coast waters of New England have been restocked with inshore cod.

II. VEGETABLE FOOD

4. SUGAR. — Sugar is found in varying proportions in many vegetable substances, but the market supply of this food-staple comes in about equal proportions from two plants — the sugar-cane and the sugar-beet.

The **sugar-cane** flourishes in tropical and subtropical regions. It is a native of southern Asia, and was unknown to our European ancestors till about a thousand years ago. The increasing use of tea and coffee, near the middle of the last century, first brought this product into importance as a commodity of Western trade. Some historians assert that the plant was brought to America by the Spanish colonists, but good authorities claim that several kinds of cane are native to the West Indies. The greatest sources of supply are the islands of the East and West Indies.

Sugar is also cultivated in Louisiana, the Guiana colonies, Brazil, the Hawaiian Islands, India, and Egypt.

The crop of Louisiana sugar in 1890 was 130,000 tons.

This is about one-tenth of the amount yearly consumed in the United States. There are sugar lands, not only in Louisiana, but in Florida and Texas, that are capable of greatly increasing the present home production.

The **sugar-beet** grows in a more temperate climate than that required by the sugar-cane, and is raised in great perfection in continental Europe. Germany leads in the production of beet-sugar, and is followed, in order, by France, Belgium, Austria, Russia, and the Netherlands.

The crop of southern Russia yields a higher percentage of sugar than that of any other country. The culture of the sugar-beet has been attended with considerable success in California, where the climate and the soil seem well adapted to it.

This industry was first undertaken in France in 1800, and has now been in a flourishing condition for about fifty years. Napoleon offered a prize of $200,000 for a practical means of extracting sugar from beets, and thus first gave this industry an important place in commerce. The success attending it is due, partly to careful selection and development of the plant to increase the amount of sugar in the beets, and partly to government bounties in the countries named.

The production of raw sugar from both cane and beets involves several processes which must take place at or near the fields of production.

The cane is cut close to the ground, and the stalks are either crushed between rollers, or shredded or sliced, and then treated with hot water to extract the sugar. Briefly, this solution is filtered, boiled, settled, skimmed, and then boiled down or evaporated to the crystallizing point, when the molasses is drained away.

The beets are cleaned, ground to pulp, and treated with water. The juice is pressed from the pulp, then filtered and purified in various ways, and afterwards passed through boiling-pans till it is ready to crystallize. The methods for obtaining beet-sugar and cane-sugar from the juice are similar.

The crystalline product in both cases is the raw or "brown" sugar of commerce.

The production of refined sugar involves a long series of operations which require skilled labor and a costly plant. Hence it is seldom carried on where the sugar is grown. Most of the great refineries are in seaports having easy communication by water with the sugar-producing countries. Thus, the sugar-refining of the United States is done almost wholly at Boston, Brooklyn, Philadelphia, Baltimore, New Orleans, and San Francisco.

The treatment for refining is the same for both cane and beet-sugar. The raw sugar is first melted with water in iron tanks. The hot liquor is then strained through cotton, passed through layers of animal charcoal, and afterwards evaporated. The most recent and successful method for treating cane juice is known as "the diffusion process." Most of the processes in the manufacture of white sugar are assisted by the force of gravity. Hence the refineries are built many stories high.

Sugar-refining has been much improved and cheapened by two inventions, — the vacuum-pan and the centrifugal filter.

In the **vacuum-pan** a partial vacuum is obtained above the sugary solution, so that it will boil at a lower temperature. This prevents charring and discoloration of the sugar. The **centrifugal filter** is a perforated cylinder in which the partly crystallized mass is rotated with great rapidity. The water and uncrystallizable sugar are thus expelled by centrifugal force, leaving only the granulated sugar in the cylinder.

The sugar product of the world is estimated at 6,000,000 tons a year. The United States consume about one-fourth of this.

In 1890 we imported **raw sugar only** to the value of $97,000,000, about half of it from Cuba. The rest came chiefly from other islands of the West Indies, the Hawaiian Islands, Guiana, and the Dutch and Spanish East Indies.

We sell **refined sugar** to the value of $2,000,000 a year, mainly to England and Australia.

Molasses, and the **rum** distilled from it, are valuable by-products of sugar culture. Great quantities of sugar are used in the manufacture of confectionery, and in preserving fruits, both dried and canned.

5. COFFEE. — Coffee is the seeds of a small evergreen tree or shrub of which three principal varieties are native, respectively, of Abyssinia, the Guinea coast, and Persia. The seeds of the Abyssinian tree have been planted in many tropical countries, and it is from the transplantation of this variety that the coffee of commerce is almost wholly derived. The plant cannot withstand even temporary extremes of temperature, is adapted to but few soils, and requires much care in its cultivation.

The value of coffee as **an article of diet** depends upon the substance called *caffeine* which it contains, and which is similar to the active principle found in tea and cocoa.

As **a commodity of trade**, the value of coffee is determined by the size, shape, and color of the seeds, and by the flavor, which is developed from the aromatic oil by the process of roasting.

Coffee, like tea and cocoa, was not much used till quite recent times. It was introduced into Europe from the Red Sea country about 200 years ago. Since then it has been cultivated with great success in Java and Ceylon, and in the tropical parts of America.

The fruit of the coffee-tree is a purplish red berry about the size of a cherry. It generally contains two of the seeds, or "beans," with whose appearance everybody is familiar, lying with their flat sides against each other. The seeds are closely covered by a very thin, parchment-like husk, around which is the pulp of the berry.

When the fruit has been gathered, the pulp is removed, and, after a long drying, the husks also. The coffee beans are then winnowed, assorted according to size, and packed in bags for export.

The finest variety of coffee is grown in the province of Arabia of which **Mocha** is the capital. None of this coffee enters into Western commerce. The product of **Java** stands next in favor. This is mostly consumed in Europe. Half of the world's supply is raised in **Brazil**, and a good deal of this is sold under the names of "Mocha" and "Java," according to the shape and size of the bean.

Coffee is largely used in all European countries except Russia, Spain, and Portugal. The value of the import into the United States in 1890 was $78,000,000. More than half of this came from Brazil, and nearly all the rest from other American countries, especially Hayti, Mexico, and Venezuela.

6. TEA. — Tea is the prepared leaves of an evergreen shrub of the genus *camellia*, native to China and northeastern India. The shrub is one of the hardiest of food-plants, but requires for a rich growth of its leaves a climate warm, moist, and equable.

Tea has been cultivated for thousands of years in China, and since the thirteenth century in Japan. It was not heard of in Europe until the Portuguese brought it from the East by the sea-route, and not used as a beverage till the Dutch introduced the practice early in the seventeenth century. From that time to this the consumption of tea has steadily increased among Western nations. For the last fifty years the plant has been successfully cultivated in Assam, that part of India to which it is native, and tea is now raised in great quantities in the island of Ceylon.

All the tea of commerce is produced in **China**, **Japan**, and **India**. The best Chinese teas are raised in the island of Formosa, though not much of this crop is exported. The principal tea-consuming countries outside of the Orient are

Great Britain, Russia, Australia, and the United States.

Tea-planting has been tried with some success in the West Indies, Brazil, California, and the Southern States. The preparation of the leaves, however, requires much hand labor, and the low rate of wages in the far East makes it impracticable for Americans to compete in tea culture.

Packing Tea, China

The United States imported in 1890 tea to the value of $12,000,000. Of this, eleven-twelfths came from China and Japan, and the rest from India by way of England. Almost all the Japanese export of tea comes to this country.

Teas are broadly classified as "black" and "green," with many qualities of each kind. Both are produced from the same plant, and the difference in color is simply the result of different methods of treatment.

The leaves of **black tea** are first allowed to ferment, then spread on trays in the sun, then dried rapidly in sheet-iron pans, then rolled between the hands, and finally dried or roasted in sieves over charcoal fires till they are black.

Green tea is treated in much the same way, except that it is rolled less and dried more rapidly. The characteristic color of green tea is often heightened artificially, and hence this article is commonly injurious to the drinker.

There are four gatherings of leaves in each year — in April, May, July, and August. Only the tender young shoots are plucked, and the first crop makes the best tea.

7. COCOA.—This is the familiar trade-name given to the seeds of the *cacao*-tree of tropical America. The tree is small, growing to a height of from fifteen to twenty feet. The fruit is a cucumber-shaped pod, containing thirty or forty seeds—the "cocoa-beans" of commerce.

As an article of food, cocoa differs very materially from coffee and tea. It contains an alkaloid or active principle called *theobromine*, and closely resembling chemically and in its effects the *theine* and *caffeine* of tea and coffee. Cocoa, unlike tea and coffee, is largely composed of nutritive substances. Eighty per cent of it consists of vegetable oil, nitrogenous compounds, and starch. Of coffee and tea, only an infusion is used, while the entire substance of the cocoa-bean is drunk in the form of an emulsion.

Cocoa was used by the aboriginal inhabitants of Mexico and the Caribbean coast countries before America was discovered by Europeans. Columbus took back the knowledge of it to **Spain**, and for 200 years it has been looked upon as almost a necessity of life in that country and in **Portugal**.

The pods of the cacao are gathered twice a year, fermented in heaps or in trenches, and dried in the sun. The seeds are then cleaned and packed for market. To prepare them for use, they are ground to powder between heated stones. This powder is subjected to great pressure to remove the fat, and generally sold under the name of *cocoa*. Mixed with sugar into a paste, and formed into cakes, it is called *chocolate*.

All the cocoa of commerce comes from the West Indies and the mainland of tropical America. The finest quality is produced in **Venezuela**. The largest crop is grown in the island of **Trinidad**. It is a valuable export from **Brazil** and **Colombia**.

Three-fourths of the yearly product of cocoa go to France for the manufacture of chocolate and confections. The United States import in 1890 about $2,000,000 worth in crude for from the countries where it is produced.

8. WHEAT.—Wheat was cultivated in the O World from the remotest antiquity. It was u known in America till brought here by European It is the principal food-grain of the most civiliz nations of the world. Accordingly, it is the lea ing grain crop of Europe, and in the United Stat ranks second only to Indian corn.

Wheat is not known to exist anywhere as wild native plant. It grows in almost any climat but those regions of the Temperate Zone in whi the winters are long and severe are best adapt to its cultivation.

The countries that supply the wheat of co merce are few in number. In Europe, the on states that produce more wheat than the hom market demands are **Russia, Germany,** and **Austri Hungary**; great crops of this cereal are raised **northern India**; but the **United States** is the ma source of supply to consuming nations. Whe is grown in every state in the American Unio but most extensively in the northern part of t Great Central Plain and on the Pacific slope.

Wheat-growing on a large scale can only be carried in thinly inhabited regions. From them this food is su plied to regions where the great mass of men are engag in other pursuits than agriculture. Thus, the "New Nort west" is the greatest wheat-producing area in the wor while our seaboard states and western Europe are dens peopled with consumers of this staple.

It is plain that the vast traffic in wheat and wheat flo between parts of the world so far distant from each ot could never have come into existence but for the inventi of the railway and the steamship. It is, in fact, only duri the present century that wheat has come to be a comm article of diet, superseding inferior grains.

The United States exported in 1890 wheat the value of $45,000,000, and wheat flour to t value of $57,000,000. Two-thirds of this went to the United Kingdom.

American grain goes from the harvest-field to the railroad in sacks, and thence is shipped East in bulk. The transfer may be wholly by rail, or partly by lake and canal.

Transshipment of it in great quantities is effected by means of the **grain-elevator.** This is a structure, operated by steam-power, which raises grain from one receptacle and discharges it into another, or else holds it in storage till needed. An elevator "leg," as it is called, reaches down into the bin, or well, into which the cars have been emptied. Inside of this leg is an endless belt, strung with cups, each of which goes up full of grain, discharging its load into a hopper above. When a ship is moored alongside an elevator, the hatches are removed, and the grain pours down through spouts into the hold.

9. MAIZE. — Maize is the seeds of a sturdy grass plant, indigenous to America. It is the only grain that was cultivated by the aborigines of our continent, deriving from this fact its more common name of "Indian corn." This plant requires a warmer climate than wheat does, and yields twice as much grain to the acre. It is not known to exist anywhere as a native wild grass.

Maize is now an important crop in both hemispheres. It is raised in Spain, Portugal, northern Italy, and the lower valley of the Danube, as well as in most South American countries. In the United States it is the leading food crop, the stalks and leaves being very largely used as fodder for livestock. It is better suited **for the fattening of swine** than any other vegetable product. The bulk of the American supply comes from the states of the central Mississippi basin. Corn flourishes in the bottom-lands, while wheat thrives on the table-lands of the same latitude.

The use of maize in the manufacture of **alcohol, starch,** and **glucose** increases year by year. The Kingsford factory at Oswego, New York, produces 25,000,000 pounds of starch annually. Glucose, or "grape-sugar," is extensively used in the making of confectionery. It is only about half as sweet as cane-sugar.

Much the greater part of the Indian corn of the world's commerce comes from the United States. The export in 1890 was $42,000,000 in value. There was, besides this, a considerable export of corn-meal. The average number of bushels yearly exported amounts to about a hundred millions.

10. RICE. — Rice is a grain that requires a low, moist soil. It is generally raised on lands where no other crop can be cultivated.

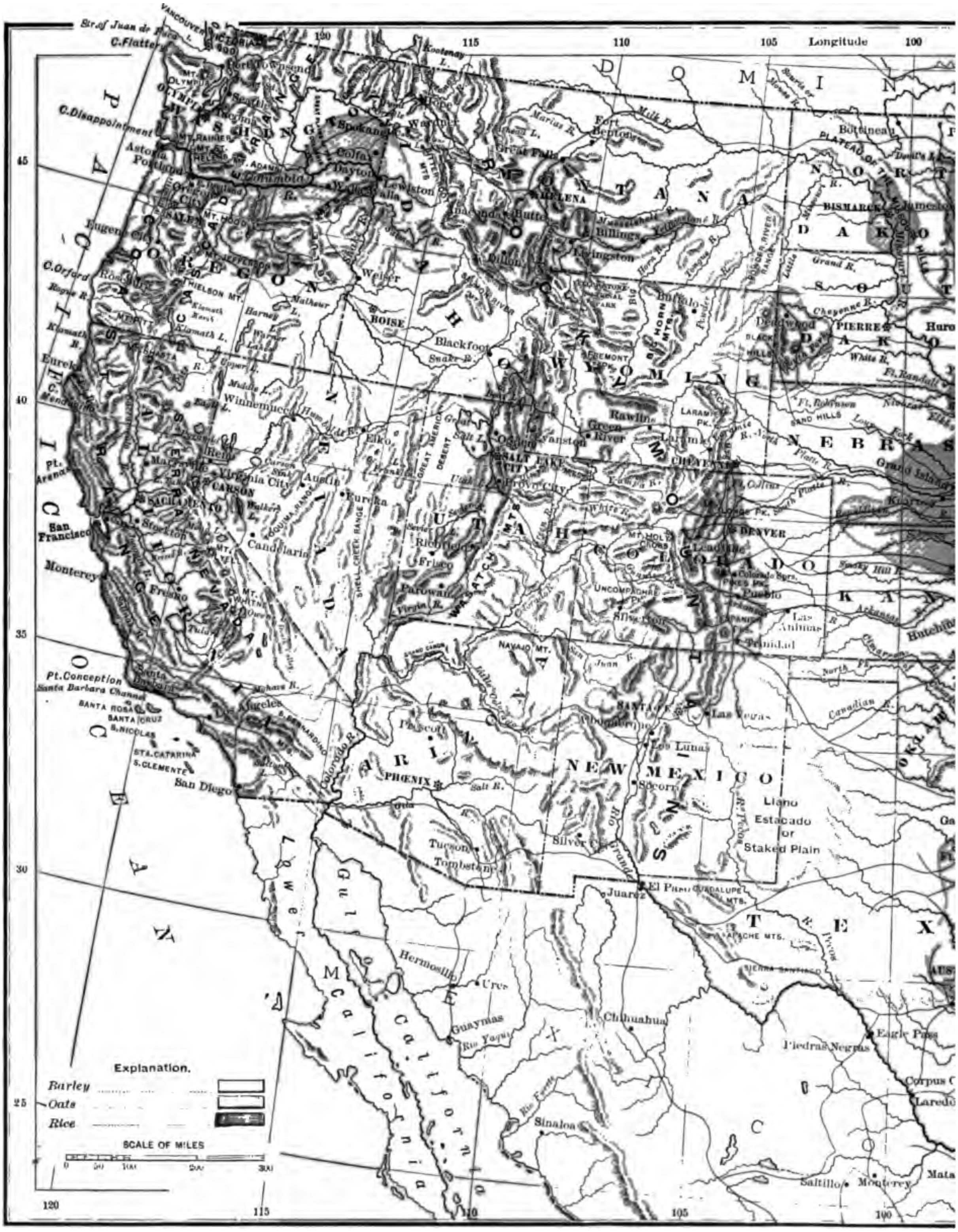
This cereal is the chief food of about one-fifth of the human race, living in southern and south-eastern Asia. The rice-fields of this region are situated near the coast and about the mouths of the great rivers, where the lowlands are annually overflowed in the rainy season.

Almost all the rice of commerce comes from the East. It plays, however, a comparatively small part in Western trade, since most of the crop is consumed in the countries where it is grown.

Rice of the finest quality is produced in the swampy lands of the South Atlantic and Gulf States, especially in South Carolina, Mississippi, and Louisiana. Here the level, low-lying fields are artificially flooded. The product of American rice was once very great, the value of the yearly export, a century ago being more than a million dollars. We are now, however, importers of this grain, taking in 1890 about $2,000,000 worth, almost all of it from China.

11. OATS. — Oats is a food crop of large amount and value, but because it is generally raised for home consumption, it forms only a small item in international trade. Oatmeal is a staple article of diet in many countries, but oats is chiefly grown as *feed for horses*, being superior to any other cereal for this use.

The principal oat-growing countries are Rus-


Longitude
120
115
110
105
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35
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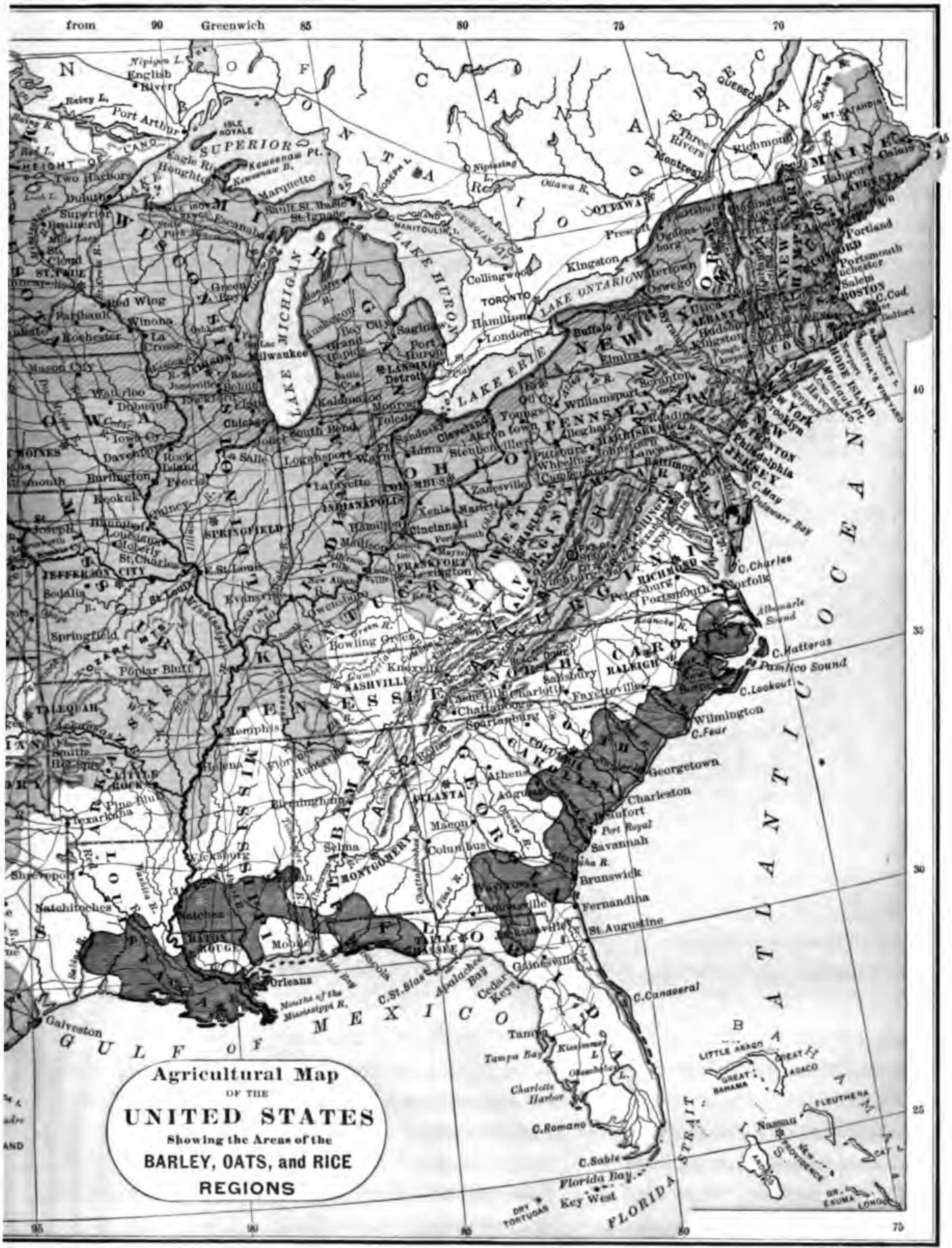
25
Str. of Juan de Fuca
C. Flattery
VANCOUVER
VICTORIA
D O M I N I
P A C I F I C O C E A N
C. Disappointment
Astoria
Portland
Seattle
Spokane
Colfax
Dayton
Lewiston
Walla Walla
Columbia R.
SALEM
Eugene City
C. Orford
Rogue R.
Klamath R.
Eureka
C. Mendocino
Pt. Arena
San Francisco
Monterey
Pt. Conception
Santa Barbara Channel
SANTA ROSA
SANTA CRUZ
S. NICOLAS
STA. CATARINA
S. CLEMENTE
San Diego
SACRAMENTO
Stockton
Fresno
Tulare L.
Los Angeles
S. BERNARDINO
O R E G O N
Klamath L.
Harney L.
Malheur L.
Warner L.
Winnemucca
Humboldt R.
Elko
Reno
Virginia City
CARSON
Austin
Eureka
Candelaria
Walker L.
SHELL CREEK RANGE
GREAT AMERICAN DESERT
N E V A D A
S I E R R A N E V A D A
MT. WHITNEY
Owens L.
Mohave R.
Colorado R.
I D A H O
BOISE
Weiser
Blackfoot
Snake R.
M O N T A N A
Fort Benton
Great Falls
HELENA
Butte
Dillon
Billings
Livingston
Marias R.
Milk R.
Musselshell R.
Yellowstone R.
Tongue R.
Powder R.
Bighorn R.
YELLOWSTONE NATIONAL PARK
BIG HORN MTS.
Buffalo
FREMONT PK.
W Y O M I N G
Rawlins
Green River
Laramie
LARAMIE PK.
CHEYENNE
Evanston
Great Salt L.
Ogden
SALT LAKE CITY
Provo City
Utah L.
Sevier L.
Richfield
Frisco
Parowan
Virgin R.
U T A H
WASATCH MTS.
Ft. Collins
DENVER
Leadville
MT. HOLY CROSS
Colorado Sprs.
PIKES PK.
Pueblo
UNCOMPAHGRE PK.
Silverton
Las Animas
Trinidad
C O L O R A D O
Arkansas R.
NAVAJO MT.
GRAND CANON
San Juan R.
Little Colorado R.
A R I Z O N A
Prescott
PHŒNIX
Salt R.
Gila R.
Tucson
Tombstone
SANTA FE
Albuquerque
Las Vegas
Los Lunas
Socorro
Silver City
N E W M E X I C O
Rio Grande
Pecos R.
Llano Estacado or Staked Plain
Canadian R.
El Paso
Juarez
GUADALUPE MTS.
APACHE MTS.
SIERRA SANTIAGO
T E X
Eagle Pass
Piedras Negras
Corpus C
Laredo
Mata
Saltillo
Monterey
Chihuahua
Hermosillo
Ures
Guaymas
Rio Yaqui
Rio Fuerte
Sinaloa
Lower California
Gulf of California
M E X I C O
N O R T H D A K O T A
Bottineau
BISMARCK
Jamestown
Devil's L.
S O U T H D A K O T A
PIERRE
Deadwood
BLACK HILLS
Cheyenne R.
White R.
Ft. Randall
Huron
N E B R A S
Ft. Robinson
SAND HILLS
Grand Island
Kearney
North Platte R.
K A N
Hutchinson
OKLAH
Explanation.
Barley
Oats
Rice
SCALE OF MILES
0
50
100
200
300



Agricultural Map
OF THE
UNITED STATES
Showing the Areas of the
BARLEY, OATS, and RICE
REGIONS

R. D. Servoss, Eng'v., N. Y.

sia, Germany, Canada, and the United States. The value of the American crop in 1890 was $222,000,000. The export in the same year, mostly to England and France, had a value of only $5,000,000. This amount, however, was far in excess of the sale in previous years.

Picking Oranges, Florida

12. BARLEY.—Barley is the hardiest of cereal grasses. The grain was formerly much used as an article of diet, but wheat has very generally superseded it. Barley is now mainly used in the brewing of malt-liquors. For this purpose it is steeped in water, and then fermented, being thereby converted into *malt*.

In Europe, barley is most largely cultivated in Russia and the Balkan states. Germany, England, and Austria, the chief brewing countries of the world, consume most of this product.

This grain grows well in Canada, from which country we imported $6,000,000 worth in 1890. In the same year the crop of the United States was valued at $37,000,000. The leading states in barley culture are California and New York.

13. RYE. — Rye flourishes in soils that are ill-suited to the growth of wheat. It is the principal cereal raised in the regions bordering on the Baltic Sea. In North Germany, Denmark, and the southern part of the Scandinavian peninsula, it is much cultivated as a *bread-plant,* being one of the most nutritious of grains.

In 1890 the rye crop of the United States was valued at $17,000,000. Of this we exported about $2,000,000 worth to Germany and Belgium.

14. FRUITS. — Owing to their perishable nature, most small fruits are consumed in the regions where they grow. There has always, however, been considerable traffic in dried and preserved fruits, and steam navigation is now developing a valuable commerce in certain fresh fruits.

Dates are raised in North Africa and Arabia; **prunes** in Austria, Turkey, and Italy; and **grape-raisins** in Spain, Turkey, and California.

Oranges and **lemons** are grown in the West Indies, Italy, and Spain, as well as in the United States; **bananas** and **pineapples**, in the West Indies, Mexico, and Central America.

Fruit culture has in recent years become a very important industry in Florida, California, and Arizona. The orange crop of 1890 was estimated at 4,000,000 boxes. This fruit is now exported in large quantities from Fernandina to London, in steamships fitted with cooling and ventilating apparatus especially for this trade.

In 1890 the United States imported fruits to the value of $20,000,000, chiefly bananas, lemons, and raisins. In the same year we exported fruits to the value of $4,000,000, of which about half was apples, to France, England, Germany, and the Netherlands.

15. CONDIMENTS. — Condiments are the only remaining vegetable products of much trade value. These enter into our food merely as seasoning. Under the familiar name of "spices" are included pepper, nutmegs, cinnamon, ginger, cloves, mace, mustard, and allspice.

We buy, yearly, condiments to the value of about $3,000,000. Half of this is **pepper,** and most of the rest consists of **nutmegs**. All but a fraction of the imports come, by way of England and the Netherlands, from their possessions in the East Indies.

SUMMARY OF OUR FOREIGN TRADE IN FOOD

(Stated in Millions of Dollars: Census of 1890)

IMPORTS		EXPORTS	
Raw Sugar	97	Wheat and Flour	102
Coffee	78	Pork Products	85
Fruits	20	Beef and Products	62
Tea	12	Maize	42
Barley	6	Cheese	8
Condiments	3	Fish	6
Cocoa	2	Oats	5
Rice	2	Fruits	4
Cheese	1	Refined Sugar	2
		Rye	2
Total Purchases	221	Total Sales	318

We buy about two-thirds as much food as we sell.

Nine-tenths of our food exports consist of **wheat, maize, pork,** and **beef.**

Five-sixths of our food imports consist of **tea, coffee,** and **sugar.**

Coffee and tea, sometimes called "auxiliary foods," are luxuries rather than necessaries. **Sugar** is the only important food-substance that is not produced in the United States in quantities sufficient to meet the demand.

CHAPTER IV

THE GREAT COMMERCIAL STAPLES

II. CLOTHING MATERIALS

1. COTTON. — Of the four staple fibers used in cloth-making, cotton and flax are of vegetable origin, while silk and wool are animal products.

Cotton is a native growth of the tropical regions of both hemispheres. It is cultivated in nearly all countries where the summers are long and hot.

The plant grows five or six feet high, and bears many seed-vessels, which are called "bolls." Each boll is about the size of an apple, and contains a mass of dark seeds about as large as coffee-beans. As the seeds ripen, the boll bursts open, disclosing a soft, fibrous substance, growing from the seeds. This is cotton "wool," — the **raw cotton** of commerce.

On some varieties of the plant, and in most climates and soils, the fine, hairy fibers are from an inch to an inch and a half in length. Cotton of this kind is called "short-staple," or **upland**. Most cotton is of this variety. In the markets, upland cotton is divided into a dozen or more grades, according to quality.

The best cotton has fibers two inches or more in length. Almost all of this is raised on the low, flat islands which line the coasts of South Carolina and Georgia. It is called "long-staple," or **sea-island** cotton. The crop of this cotton is relatively small. The fiber is not merely long but peculiarly lustrous. It is, therefore, too expensive for use in weaving any but the finest fabrics.

Cotton was spun and woven in India long previous to the Christian era. Though it is now the chief clothing material of the Chinese, it was unknown in China till about 500 years ago. Cotton cloth was worn by the inhabitants of Mexico and Peru before the coming of the Spanish conquerors. Most of the clothing of Europeans was made of wool, until during the Middle Ages some cotton began to come from India to the Western markets. About the time of the great voyages of discovery, cotton-factories were here and there set up in the Lowlands, and in the cities of Italy. The manufacture of this fiber on a large scale could not, of course, exist in Europe or America before the great inventions for working textiles had been made.

The yearly crop of all the cotton-growing countries amounts to about 9,000,000 bales. The average weight of cotton to the bale is 440 pounds. Two-thirds of the **market supply** comes from the United States, and nearly all of this is raised in the Carolinas, Georgia, Arkansas, Tennessee, and the Gulf States.

In *amount* of cotton produced, British India ranks next to our own country. A very fine *quality* of long-fibered cotton is raised in Egypt. A considerable supply is derived from Turkey, Brazil, and the West Indies. The Chinese raise a great deal of cotton, but this is used at home, and cheap cottons are imported in great quantities. Every year more and more of the crop of India is made into cloth in the country where it is grown.

In the **manufacture** of cotton, Great Britain leads all other nations; the United States ranking second, Germany third, and France fourth. The cotton industries of Great Britain grew up step by step with the cotton-planting of the United States, on which they were dependent. Most of the raw cotton for the British mills has always been received at the two great western ports of Liverpool and Glasgow. The neighboring districts abound in water-powers and coal deposits, and these natural conditions greatly favored the development of textile industries in the near-by counties.

Cotton-spinning is not now increasing in Great Britain. In the United States the reverse is true. Year by year a larger share of our cotton crop is taken by American mills. During the first half of this century most of the cotton-spinning was carried on in New England by the help of its numerous water-powers. Since the great growth of coal-mining, and the consequent use of steam-power, factory industries of all kinds have sprung up in other parts of the United States. Cotton-spinning has recently had an extraordinary growth in Georgia and the Carolinas. A great deal of the cotton used in New England now comes in covered cars directly to the mills from the Southern markets.

In average excellence, American cotton goods are superior to all others. The common fabrics made in England and Germany could hardly be sold in the United States at any price. The fundamental processes in making the cloth are four in number, — cleansing the fiber, twisting into strands, drawing out into threads, and weaving by the loom. In the order of value, the leading **mill products** of cotton are sheetings, plain cloths for printing, yarns, ginghams, and drills.

In 1890 the United States imported $1,000,000 worth of *raw cotton*, mostly Egyptian; $3,000,000 worth of *cotton cloth*, and $15,000,000 worth of *cotton goods*, mostly from Great Britain; and $11,000,000 worth of *embroideries* and *laces* from Switzerland, England, and Germany.

In the same year we sold *raw cotton* to the value of $251,000,000, — two-thirds of it to England, and most of the rest to Germany and France. We sold *cotton goods* to the value of $10,000,000. Of these, China was the largest buyer, followed in order by England, Brazil, Hayti, Chile, Mexico, and Argentina.

Modern science has discovered many uses for **cotton-seed** and the **oil** extracted from it. What was once regarded as the merest refuse is now a valued product of the cotton-fields.

The plant yields about three pounds of seed to one pound of fiber. The oil pressed out of the seeds is widely sold for various purposes. It is used in soap stock and as a substitute for lard, and in Italy and France does service in making "olive" oil. The solid parts of the cotton-seed that remain after the oil has been extracted are called **oil-cake**, and afford excellent fodder for livestock. This "cake" contains a large share of the most productive elements that the cotton-plant takes from the soil, and is therefore one of the best and cheapest of fertilizers.

In 1890 the United States exported $5,000,000 worth of *cotton-seed oil* to the Netherlands, France, and Italy, and $8,000,000 worth of *oil-cake and meal* to England and Germany.

2. WOOL. — Wool is the short, crispy hair which grows on the alpaca, the llama, the camel, several kinds of goat, and the domestic **sheep.** Nearly all the wool of commerce is derived from the several breeds of the last-named animal. In all wild species of sheep the covering of the body is long and hair-like; the closely matted fleece, so highly valued as clothing material, has been developed by domestication.

The fibers of wool are strong, elastic, and easily spun into thread. Owing to their serrated, or toothed, surfaces, they readily unite to make a strong fabric. Woolen garments have a pleasant softness, and are a protection against extremes of heat and cold. Wool has always been highly prized as a textile fiber. Next to cotton, it is the most important of all clothing materials.

The sheep was domesticated in Asia and Europe in far remote ages, though unknown in America till after the Spanish Conquest. It is probable that before weaving was known, woolen garments consisted simply of **felt**. This is prepared by dampening the fibers and matting them together in layers or sheets, which retain their shape when dried. Felts are a considerable item in modern manufacture, especially in carpetings, hats, and slippers, but are little used in making garments of any kind.

Among the ancients the weaving of woolen cloth was everywhere a household industry. The wool first used in Europe was brought from the East, but the sheep was finally domesticated in all Mediterranean countries. The Romans introduced into Spain the **Merino** variety, and for centuries the best wools came from that country. The finest fleeces of Saxony, England, the Australasian colonies, and the United States are clipped from descendants of the Spanish Merinos.

Sheep thrive best in temperate climates, especially where the land surface is somewhat irregular and elevated. The great wool-growing countries, in the order of value of the product, are Australia and New Zealand, Russia, the United States, and Argentina.

With the exception of the United States, none of the countries named manufactures much of its own wool. The Australasian product goes almost wholly to the mills of Great Britain. Nearly all the Argentine wool is sold to France and Germany. In the United States the home supply of wool, though very large, does not equal the factory demand. Ohio, Illinois, Texas, and California are the leading states in sheep-raising.

The world's annual product of wool is estimated at 1,000,000 tons, and of this the United States consumes about one-fourth.

In woolen **manufacture** Great Britain takes the lead, with France second, the United States third, Germany fourth, and Austria-Hungary fifth. In the United States this industry has its principal seats in New England, New York, and Pennsylvania. In 1890 the value of American manufactures of wool was $337,000,000, an amount greater by one-fourth than the value of our cotton manufactures in the same year.

In order to prepare wool for weaving into cloth, it is first cleaned, and then combed. In the course of this combing, the machine lays some of the hairs in one direction, and others in the opposite direction, in order that their notched surfaces may interlock with one another when they are twisted into threads. The delicate threads are doubled and twisted into strands, suitable for use in the weaving-loom.

The silky, white wool of the Angora goat, used for very fine and costly fabrics, is sent from Angora in Asia Minor, in small quantities, to France and England. This wool, which is called **Mohair**, is woven in Persia into choice shawls, and in France, Great Britain, and elsewhere, into shawls often made in imitation of the Persian product. Certain laces and braids are also made from mohair.

In the state of Cashmere, in Himalayan India, there is a kind of goat called the **Cashmere**, or "shawl" goat. Its wool is of two qualities, which are separated from each other by hand. The finer quality is soft and lustrous, and the most valuable of wools. It is exported to Europe in very small quantities. In Cashmere and other parts of northern India, it is woven into shawls that command a very high price, owing more to the great amount of labor and time required to make them than to the amount of wool used.

The wool of the **alpaca** and the **llama** is long and glossy, and is in some demand for weaving the finer grades of dress goods. It forms a small item in trade, and comes from Peru.

In 1890 the United States imported *woolen goods* to the value of $57,000,000, mostly from Great Britain and Germany; and *wool* to the value of $15,000,000, almost all of it from British colonies by way of the parent-country, though *carpet wools* were imported from Russia, Argentina, and China.

Our exports of wool and its fabrics are of small value.

3. SILK. — Silk is the fine, soft thread produced by the silkworm in making its cocoon. The worm is hatched from the eggs of a moth known as the **bombyx**, and feeds upon the leaves of several varieties of mulberry-tree.

It was once supposed that silk-culture could be profitably pursued wherever the mulberry grows, but experiments have shown that in some soils and climates the mulberry leaves are not of a quality to enable the caterpillar to produce good silk. The leaf preferred by European silk-growers is that of the **white mulberry**, but several other varieties are cultivated for this purpose.

Like other caterpillars, that of the bombyx, when full grown, spins a **cocoon**. Moving its head about in regular order for three or four days, it throws out from two glands a delicate, double line of glutinous silk fiber. This unbroken line of silk, several thousand yards long, forms the oval cocoon in which the worm encloses itself.

If undisturbed, the caterpillar would change, first into a pupa or chrysalis, and then into a winged moth, and would presently emerge from its silken case. But this escape, by breaking the fiber of the cocoon, would render its silk worthless. Accordingly, such of the cocoons as are to be unwound are subjected to enough heat to kill the worms. The ends of the fiber are then found, and the fine filaments of eight or ten cocoons are wound off together on a reel, being twisted into one in the operation. The skeins from the reels are cleansed, and packed in bales of about a hundred pounds each. This is the **raw silk** of commerce.

The hatching and feeding of silkworms are **conducted artificially**, indoors, both for the convenience of the workmen, and to protect the caterpillars from injurious changes of temperature. A supply of freshly plucked mulberry leaves is maintained during the four or five weeks of the silkworm's growth.

Silk-culture has been an industry among the Chinese for thousands of years. It was introduced into Japan and Persia about the beginning of our era, and a few centuries later into Asia Minor and the three great peninsulas of southern Europe. — Greece, Italy, and Spain. In recent years silk-raising has also taken on a good deal of importance in British India.

Although other parts of the world seem well suited to silk-culture, and though many efforts have been made to extend it, none of these attempts has met with much success. The business of preparing raw silk requires much time, watchfulness, and skillful manipulation. It is, therefore, unprofitable in countries where labor commands high wages.

China and **Japan** export only their surplus silk, using most of the product in home manufactures. Nevertheless, the total production of these countries is so great that, together with **Italy**, they supply a very large proportion of the raw silk of commerce. The industry has never disappeared from Spain and Greece, but the yield of these countries is small.

France is the leading country of Europe in silk **manufacture**, and Lyons, the center of the industry, is the world's chief market for silk goods. Germany ranks next in this branch of textile manufacture, and Crefeld is the busiest center of it there.

The United States stands third as a silk-manufacturing nation. The product in 1890 had the value of $87,000,000. New York and New Jersey are the leading states in this industry. Sewing-silk, ribbons, and handkerchiefs have heretofore been the staple American silk products, but our manufacture of dress goods and velvets is rapidly increasing.

In 1890 the United States imported *raw silk* to the value of $23,000,000, and *silk goods* to the value of $39,000,000. More than half the raw silk came from Japan, and almost all the rest from

Italy and China. The silk goods were derived from France, Germany, England, and Switzerland.

We have scarcely any export trade in silks.

4. FLAX. — This name is given both to the growing plant and to its prepared fiber. The flax-plant thrives best in regions where the subsoil retains a good deal of moisture. It grows in a single slender stalk to a height of from two to four feet. Small bright blue flowers precede the pods which contain the **flaxseed**, or **linseed**, from which oil is extracted. The chief use of this oil is in mixing paints and varnishes. Linseed cake is a nutritious fodder.

Flax-Spinning by Hand

To make ready the fiber for manufacture involves careful and expensive processes. The stalks are not cut down, but pulled up by the roots, laid side by side, and soaked in water till the greenish outer bark is fermented or rotted away. The inner fibers are spread out and turned in the sun till they are bleached. This takes about ten days.

The finished product is flax, becoming in turn the raw material of **linen** manufacture. The term *linen* is applied to cloth made from the fibers of both flax and hemp.

The culture and spinning of flax are probably the most ancient of textile industries, and until the great expansion of cotton-culture in our own country, most light garments were made of linen. Cotton has displaced this because cotton fiber needs neither the long bleaching, nor the other elaborate treatment that makes linen expensive. In ancient Egypt, linen garments were in common use, and down to the close of the Middle Ages, Egyptian fiber formed the principal supply of civilized nations. At a later period, flax was considerably cultivated in the lowland countries of Europe.

Half the flax of commerce comes at present from **Russia**. Most of the rest is exported from Germany, France, Austria, Belgium, Italy, and Ireland. Small crops of flax are raised in India, Canada, and the United States, chiefly for the oil from the seed.

The **manufacture** of linen is carried on chiefly in Russia, Italy, France, Ireland, Scotland, and Germany, named in the order of the value of the products.

The coarser manufactures consist of canvas, sacking, and carpet-linings, besides tents, towelings, and brown-linens. The finer products include table-napery, "damasks," cambrics, lawns, and threads.

The United States imported in 1890 *raw flax* to the value of $2,000,000, mostly from Ireland, Great Britain, Canada, and Russia; *linen goods* to the value of $16,000,000, from the United Kingdom and Germany; and *linseed oil* to the value of $3,000,000 from British India and England.

5. HIDES AND SKINS. — (a) **Leather** is the raw material of a multitude of manufactures, but its most important uses are in the making of **footwear, gloves,** and **harness.**

As might be expected, the oxhides and sheepskins of commerce are imported mainly from countries where the grazing interests are largest. The vast areas watered by the Plate and Orinoco rivers, Australasia, British India, and our own western Plains are the great **sources of supply**. Goatskins, from which "Morocco" leather is made come chiefly from the countries of North Africa.

Hides are converted into leather by a process called "tanning," which consists in subjecting them to the action of tannic acid. This acid is derived from many natural sources, but most commonly from the bark of the tree commonly known as the **hemlock-spruce**. **Oak bark** is especially valuable for tanning purposes, but its use is comparatively small. "Russia leather" owes much of its excellence to the peculiar qualities of the bark of the **Russian birch**, which is employed in producing it.

The location of tanneries is generally determined by nearness to forests of hemlock and oak. The tanning business is actively followed in the states of Pennsylvania, New York, Maine, New Hampshire, and Michigan. In Europe, the **leather production** is greatest in Germany and France, and accordingly Paris, Marseilles, and Berlin are the principal leather markets on the Continent.

Much the greater part of all footwear is made from the leather of oxhides and calfskins. In the United States the demand for this leather for **shoe manufacture** has not kept pace with the demand for beef. As a consequence, although the leather products of our country are of very great value, a surplus of hides and leather remains for export.

In 1890 the United States imported *goatskins* and *sheepskins* to the value of $26,000,000, principally from Argentina, Great Britain, Uruguay, and Mexico; *leather* to the value of $2,000,000, mainly from France, Germany, and Great Britain; and *leather goods*, mostly gloves, to the value of $6,000,000, from France and Germany.

In the same year we sold *hides* and *skins* to the value of $2,000,000; *leather goods* to the value of $1,000,000, distributed to many countries; and *leather* to the value or $11,000,000, mostly to Great Britain.

(b) **Furs** are worn in winter in Europe and America, for both comfort and adornment. They are for the most part obtained from wild animals that inhabit the colder regions of the Northern Hemisphere.

Among highly prized fur-skins are those of the *sea-otter*, the *sable*, the *ermine*, the *silver-gray fox*, the *fur-seal*, and some varieties of *squirrel*. The sea-otter, fur-seal, and silver-gray fox are found only in America; the sable and the ermine are often trapped in Canada. The Siberian forests are a large **source of supply** for valuable fur-skins.

The skins of the **fur-seal** come principally from the Pribylov Islands in Bering Sea. These islands form part of the territory of Alaska; and in order to prevent the extermination of the fur-seal the United States government limits by law the number of these animals that may be taken each year.

As cured at the "fisheries" for the market, the skins of the fur-seal are coarse and unsightly. To convert them into furs for garments, the long hairs are plucked out, and the soft fur which remains is dyed a fine, deep brown. The trade value of the fur depends on the degree of success attending the **dyeing process**. For many years, all sealskins were sent to London for plucking and dyeing, but many are now prepared for market in the United States.

The seals taken on the various coasts of the North Atlantic Ocean have little or no fine under-fur. Their skins are suited only for the manufacture of leather. The several kinds of animals of this sort have in common the name of **hair-seal,** to distinguish them from the fur-seal of Bering Sea and Antarctic waters.

The number of fur-seals annually visiting the Pribylov Islands is estimated at five millions. They come to these rookeries in May and June, and leave them in October and November. Some of them resort for the winter to Japanese waters, and others to the coasts of Washington and British Columbia.

furs and skins to the value of $2,000,000, from Germany, England, and Canada; and *dressed furs and fur-goods* to the value of $5,000,000, from England, Germany, and France.

In the same year we sold furs and fur-skins to the value of $5,000,000, consisting *mainly of seal-pelts, to England.*

It is worthy of note, as an example of twofold commercial exchanges, that part of our purchases of furs from England consists of sealskins dressed from the seal-pelts that we sell to that country.

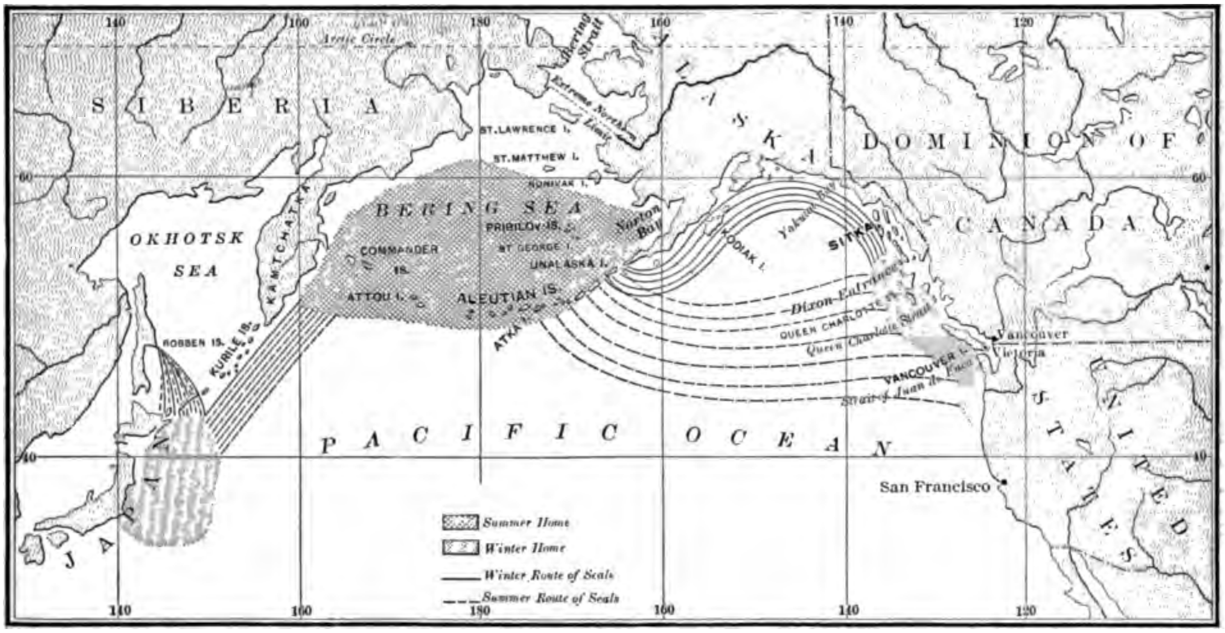


Chart showing Sealing Regions in the Pacific

The world's chief **fur markets** are London, Leipzig, and Nijni Novgorod. Nearly all the furs of the Hudson Bay Company are sent to London, as are also most of the inferior fur-skins of South America and Africa. The furs sold at the fairs of Leipzig and Nijni Novgorod are mostly prepared from the valuable peltries of the Russian dominions in Asia and Europe.

In 1890 the United States imported *undressed*

6. OTHER CLOTHING MATERIALS.— Other items of considerable value, which enter into dress, are *buttons, hats and bonnets,* and *feathers.*

(a) **Buttons** are made from vegetable "ivory," mother-of-pearl, india-rubber, bone, metal, and wood. Metal and wood are made also into button-"molds," to be covered with woolen, silk, or other cloth.

Vegetable ivory is the meat of the nut of a South American palm. It closely resembles ivory, has a firm texture, and is easily worked when softened by hot water.

All sorts of buttons are manufactured in the United States, yet our import of 1890 reached the value of $3,000,000. Vast quantities of buttons are made in the prisons of France and Austria, and it is from these countries that most of our purchases of buttons and button-molds come.

(b) **Hats and bonnets,** together with the materials they are made of, and including hoods, formed an import of the United States in 1890 to the value of $3,000,000. About half of this purchase consisted of **straw-braid** from China and Italy. The finished hats were mostly from Switzerland and France, and the hoods from England.

The so-called "Panama," or palm-leaf hats, made in Ecuador and Central America, form but a small item in commerce.

(c) **Feathers.** — The plumes and other fine feathers of tropical and other birds are in great demand for the ornamentation of head-dress. The finer feathers are costly, and their brilliant colors are now artificially imitated.

The plumes of the **ostrich** have always been highly prized, and in recent years ostrich-farming has sprung up in South Africa and elsewhere.

Birds of gorgeous plumage abound in the islands of the Indian Archipelago. The supply of feathers from that region comes to market through the hands of the Dutch.

The United States imported, in 1890, feathers, natural and artificial, to the value of $2,000,000, from France and England.

SUMMARY OF OUR FOREIGN TRADE IN CLOTHING MATERIALS

(Stated in Millions of Dollars: Census of 1890)

IMPORTS		EXPORTS	
Cotton and Products .	30	Cotton and Products .	274
Wool and Products .	72	Leather and Products .	14
Silk and Products . .	62	Furs	5
Flax and Products .	21		
Leather and Products	34		
Furs	7		
Buttons	3		
Hats and Bonnets . .	3		
Feathers	2		
Total Purchases .	234	Total Sales	293

In the last census year we sold more clothing materials than we bought. In brief, we may say that we *sell cotton*, and *buy silk and wool.*

CHAPTER V

THE GREAT COMMERCIAL STAPLES

III. MINERAL SUBSTANCES

1. **IRON.** — This most useful of metals is found in all parts of the world, but is extensively mined in only a few countries. Most of the iron of commerce comes from the United States, Great Britain, and Germany.

Iron ores are mined in twenty-six states and territories of the Union. The richest deposits are near the Lake Superior shores of Michigan, Wisconsin, and Minnesota. Second in the amount of output are the ore-beds of the southern half of the Appalachian range. Great quantities of this metal are produced in the Lake Champlain district of New York, and in southeastern Missouri.

Much of the value of iron is due to the **ease with which it can be worked.** It is very strong, malleable, and ductile. At the proper heat it is readily welded and forged. Owing to these qualities, and to its abundance in nature, iron is used not only for making a great variety of small utensils and other articles, but also for the manufacture of machinery of all kinds, and for the building of railways, bridges, and great edifices.

No other metal is found in such **varying quality.** Iron does not occur in its pure state, but is generally mixed with other mineral substances. It is easily oxidized, or rusted, and accordingly its most plentiful ores are those known as *oxides.* These are also the most workable, and therefore the most valuable. In other very common ores, iron is found in the form of *carbonates* or of *sulphides.* Most iron ores are brown in color. The pure metal is grayish white.

To extract the iron from the ore, fuel and ore are put into a blast furnace, generally with marble or limestone, to hasten the fusion. Under the intense heat, most of the iron melts and collects by itself at the bottom of the furnace, while the other parts of the ore form what is called *slag.* This, being the lighter, floats on the top of the molten metal. This operation is called **smelting.** Almost any fuel may be used in the process. Coal and coke are the most widely used. When the ore is smelted with charcoal the finest iron results. Petroleum and natural gas are also employed.

The molten iron drawn off from the furnace, and cast into bars, is known as pig-iron. A "pig" is an oblong block, originally intended as a load for one man, and weighs about one hundred pounds. The product of the iron regions is reckoned in pig-iron.

Pig-iron, when melted and cast in molds of various patterns to make the commoner products of the foundry, is called **cast-iron.** Casting does not change the character of the material, but only its form. The great adaptability of iron for the production of castings is due to its property of slight expansion during the process of cooling. Thus it fills the mold evenly and smoothly, and better results are obtained than could otherwise be had.

By means of a process called "puddling," crude iron is freed from certain elements that were not removed in the smelting, especially from carbon and phosphorus. As a result of this refining the metal becomes tougher and more malleable, and is then called "malleable iron," or **wrought-iron.**

There are several processes by which iron is refined so as to increase its carbon by a small percentage. It is thus converted into **steel**. The most famous method is called the "Bessemer process," from the name of its inventor. Steel was formerly quite expensive, but it has now taken the place of iron in many uses, especially in those where the product is subject to great wear.

Cast-iron contains four or five per cent of carbon, and is quite brittle.

Wrought-iron is almost free from carbon, and is tough and elastic.

Steel contains about one per cent of carbon, is lighter and more flexible than either cast-iron or wrought-iron, and can be tempered to almost any degree of hardness, toughness, or elasticity, according to the use to be made of it.

Interior of Steel Works. — Plate Machine

In the United States the smelting of iron and the manufacture of iron and steel are the most extensively carried on in the adjoining states of Illinois, Indiana, Ohio, Pennsylvania, and New York.

In steel-making the United States takes the lead among nations. During the decade ending with 1890 this business was greatly developed in Alabama and Georgia. Four-fifths of the American product was Bessemer steel.

Iron-working of every kind is so **dependent on fuel** that the location of iron industries is largely determined by the abundance and cheapness of coal. Thus, the ores of the Lake Superior country go to Chicago to meet the coal of Indiana, to Cleveland to meet the coal of Ohio, and even to Pittsburg to be smelted by the coal of Pennsylvania.

Only a few of the familiar and more important **manufactures of iron** can here be mentioned. The greater part of all piping for water, gas, steam, and oil is made of iron. Stoves and ranges, nails, wire, chains, posts, and railings are items of great aggregate value.

Among notable **manufactures of steel** are locomotive engines, stationary engines, steam fire engines, and machinery of all kinds; agricultural implements; bicycles, cars, and carriages; tools, arms, and cutlery. Most of the rails now laid on American railways are made of steel.

In 1890 the United States imported iron and steel and their products to the value of $44,000,000. Nearly half of the total purchase consisted of *tin-coated iron plate* from Great Britain.

From Sweden-Norway and Germany we buy *bar-iron* and *iron rods;* from Spain, *iron ore;* and from England, *wire, pig-iron,* and *machinery.*

We export *firearms, tools, hardware, machines,* and *farm implements* to all parts of the world. In 1890 the sale of these amounted in value to $30,000,000.

2. COPPER. — Copper is, next to iron, the most useful of metals. Like iron, it is found in all parts of the world.

Copper is of a reddish color, and is malleable, and very tenacious and ductile. It combines readily with other metals, being more used in alloys than in the pure state.

Alloyed with zinc, copper is made into sheathing and all kinds of **brassware**. With a small proportion of tin it becomes **bronze**, and, with more tin, **bell-metal**. Silverware and silver coins are made more durable by a slight admixture of copper.

Some salts of copper are of great value in the manufacture of pigments and dyes. These are mostly greens and blues, and are all highly poisonous. The best known **copper pigments** are verdigris, Bremen blue, and Brunswick green. **Blue vitriol**, used in electric batteries and in calico-printing, is also prepared from copper.

There are many copper ores. Of these, the **sulphur compounds** are the most valuable. But the richest deposits consist of the **pure metal**, sometimes found in huge masses. The most productive mines are in Montana, and in Michigan near the Lake Superior shore. There are also large beds of copper ore in Utah, New Mexico, and Arizona.

Chile ranks second among the countries of the world in the output of this metal, followed in order by Spain, Germany, and Australia. The total production of copper is about 200,000 tons a year. Of this, the United States furnishes more than half, and thus regulates the price of copper for the world.

Seven-eighths of all copper is found in the metallic state. This is reduced and purified by smelting, which in the case of copper is known as the **dry process**.

The sulphur compounds are treated by the **wet process**. This consists of grinding and calcining the ores, washing them in acid solutions, and then separating the copper by chemical precipitation.

Two-thirds of the copper produced in the United States is used in home manufactures.

In 1890, $6,000,000 worth of *copper ore* was exported, mostly to England, besides $2,000,000 worth of *ingots* and *bars* to England, France, and the Netherlands.

3. TIN.—Tin is a colorless metal, very flexible and malleable. It possesses hardly any of the ductility which is so marked a property of copper. It does not easily tarnish or rust, and hence is especially suited for the manufacture of cooking utensils and food vessels.

Tin is found in separate particles in many alluvial deposits. This is known as **stream tin**. The most valuable ores of this metal are oxides, which are called **tinstone**. Tin is separated from the ores by crushing, washing, and smelting.

The use of tin with copper to make bronze and bell-metal has already been referred to. Alloyed with copper, antimony, and bismuth, it is employed in the manufacture of **britannia-ware**. **Solder**, **pewter**, and **type-metal** are alloys of tin and lead.

The ancient mines of the English peninsula of **Cornwall** long furnished the greater part of the supply of tin, and they are still productive. But the richest tin mines in the world are worked by Chinese laborers in the Dutch East Indian islands of **Banca** and **Billiton**. The product, commercially known as "Straits tin," comes to market by way of the adjacent port of Singapore. Banca tin is the purest. Cornish tin ranks next in quality.

Deposits of this metal are worked in Bolivia, Peru, and Australia. Tin ores of inferior character exist in several of the Atlantic States of the Union, and some deposits in the **Black Hills** of South Dakota. Some mining has been done at Hill City in that state.

Vessels made from tin must be quite heavy to retain their shape and strength, and by reason of its comparative rarity this metal is too expensive for use as the sole material of its various wares. Hence, tin is chiefly employed for coating other metals, especially iron, to protect them from rusting. **Tinned iron** is used for roofing and piping, and especially for the manufacture of household utensils and of cans for "putting up," or preserving, fruits, vegetables, meats, and fish.

Iron in sheets or in forms is tinned by hot immersion in a solution of tin, when it becomes coated by chemical action. If pure tin is used, the sheets are marketed as **tin-plate**. If an alloy of tin and lead is used, the product is known as **terne-plate** (*i.e.* three-plate).

Owing to the growth of our **canning industries**, the United States is the greatest tin-consuming nation. Our importation of tin-plate and terne-plate has already been mentioned under the head of *iron*, of which metal these plates mainly consist.

In 1890 the United States imported tin in bars, blocks, and "pigs," to the value of $7,000,000, about half of it from England, and half from the East Indies.

4. THE PRECIOUS METALS. — Besides iron, copper, and tin, the only metals that the United States buy and sell in large amounts are **gold** and **silver**.

These substances are employed in the arts and in some industries, but they are, as we have seen, chiefly useful in aiding exchange and measuring values.

Owing partly to their rarity, and partly to universal consent, gold and silver have a market value of their own which is very high as compared with their weight and bulk. Hence, money made of them is easily carried about in considerable sums. These metals are durable when slightly alloyed, they do not tarnish, and they can be melted into coins of any desired value. Such money is everywhere recognized at sight for what it is. The supply of the precious metals is quite regular, and the demand rarely falls off, so that gold and silver are not subject to great or sudden changes of value. No other substances are so suitable for valuable coinage.

(a) Gold sometimes occurs in combination with *tellurium*, but it is generally found in the pure metallic state. It usually appears in veins of quartz, and in soils which have resulted from the washing away of quartz rock.

Gold is separated from quartz by crushing the rock, and then agitating the pulverized mass with water and *quicksilver*. The quicksilver unites with the particles of gold to form what is called an *amalgam*. The quicksilver is then distilled out of this amalgam, and the gold remains.

Quicksilver, or mercury, may be used over and over again for the purpose of treating certain gold and silver ores. Quicksilver is most commonly found combined with sulphur in the ore called *cinnabar*.

Other uses of mercury are in making the pigment known as *vermilion*, in preparing *calomel* and *corrosive sublimate*, and in manufacturing *mirrors*, *thermometers*, and *barometers*. A good deal of quicksilver comes from Almaden, in Spain. It is also produced at Idria, in Austria. The richest mines, however, are at New Almaden, in California.

Gold is found in many parts of the world. The richest fields are those of **California**, **Australia**, and **Russia**. The Australian product has come mainly from Victoria. The Russian field extends for hundreds of miles along the eastern slope of the Ural range of mountains.

In 1890 the United States imported $13,000,000, and exported $17,000,000 worth of gold. These exchanges were distributed among many countries.

(b) Silver is rarely found as a pure metal, but usually in combination with other mineral substances, especially with lead. In American *coinage* this metal has about one-sixteenth the value of gold. As a *commodity*, its value is about one-twentieth that of gold.

Most of the silver of the world comes from America. Until recent times, the mines of Mexico, Peru, and Bolivia were the chief **sources of supply**. Though these mines are still prolific, the United States has now become the greatest of silver-producing countries. Colorado, Montana, and Nevada are the leading states in this industry.

Silver is used in the **coinage** of nearly every nation in the world. It has always been looked upon with peculiar favor by the inhabitants of southern and eastern Asia. The general statement may be made that silver is a Western product which slowly but surely finds its way to the East. It is hoarded in vast quantities by the Orientals.

Besides its use as money, silver is employed in many **arts** and **manufactures**. The process of depositing a thin coating of silver on the surface of baser metals has led to the manufacture of great quantities of *plated ware* for household and other purposes.

In 1890 the United States imported *silver ores* to the value of $7,000,000, and silver *coin and bullion* to the value of $21,000,000, both items almost wholly from Mexico.

In the same year we exported silver to the value of $35,000,000, nearly all of it to England and the countries of Asia.

5. LEAD. — Lead is a heavy, malleable, bluish-gray metal. It is so soft that it may be cut with a knife, and it is easily rolled into sheets.

The chief **sources of supply** are the United States and Spain, though considerable quantities are mined in Germany and the island of Sardinia. When combined with *sulphur*, this metal forms an ore known as "galena," which is mined on a large scale in the region where Illinois, Iowa, and Wisconsin meet. A great deal of lead is found with the *silver ores* of Colorado and Mexico.

Heated in the presence of air, lead *oxidizes*, and becomes an orange-colored powder, called **litharge**. This is used in the manufacture of *cement, red paint*, and *flint-glass*.

White lead, which is the basis of most paints, is produced from lead by chemical process. Other products of this metal are *pipes* and *tubes*, *sheet-lead*, and *shot*.

We have little foreign trade in this commodity, exporting small amounts of *lead manufactures* to many countries, and importing some *crude lead* from Mexico.

6. ZINC. — Zinc is a malleable, bluish-white, tough metal, not easily melted or rusted. In its crude form it is called "spelter." It is usually found in combination with lead and sulphur.

This metal is produced the most largely in **Germany**. **Belgium** ranks second in the quantity mined, and the **United States** third. The most valuable American deposits of zinc are in Missouri, though it also occurs in New Jersey, Pennsylvania, Virginia, and Illinois.

Zinc, rolled into sheets, is much employed to protect surfaces exposed to heat. Iron, plunged into a bath of melted zinc, becomes coated with the latter, and is thus protected from rust. The wares made from the coated metal are sold under the name of "galvanized iron." Zinc is used in electric batteries, and in making the pigments known as *zinc-white* and *zinc-green*.

We have very little foreign trade in zinc or its manufactures.

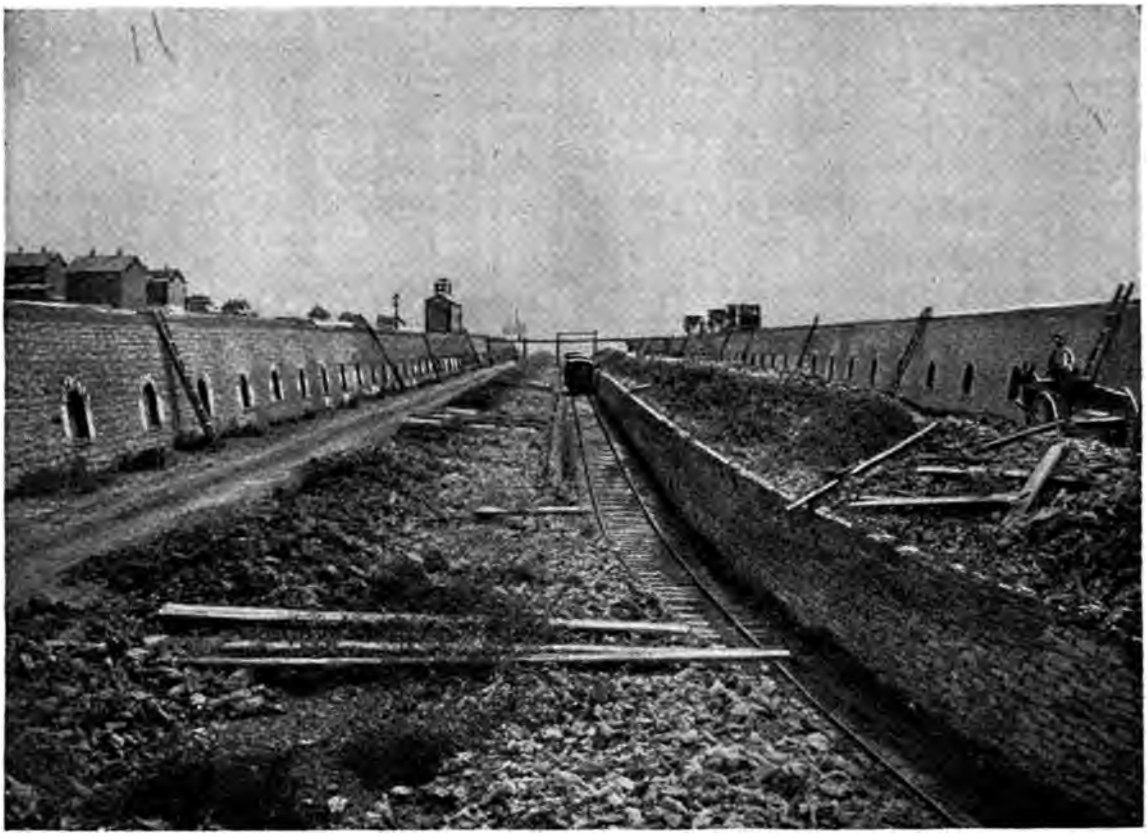
7. COAL. — Coal, the principal fuel of civilized man, is the product of vast accumulations of vegetable matter that has for ages lain buried beneath the surface of the earth. The woody fiber of these vegetable deposits, shut up away from the air, has undergone very slow decomposition, resulting in the large proportion of combustible **carbon** which all coal contains. The character of coal varies with the length of time it has been buried, and the nature of the vegetation that has entered into it.

Two centuries ago most metal-working was conducted by crude methods and on a comparatively small scale. Wood and its charcoal were the fuel used before the coal deposits were worked, and many forests were destroyed to feed the furnaces. Coal-mining was then limited to shallow excavations. Wood is still the principal fuel of Sweden and a few other countries where timber is abundant and coal rare.

Anthracite, or hard coal, contains the largest proportion of carbon.

Bituminous, or soft coal, ranks second in the amount of combustible matter.

Lignite, or brown coal, contains a smaller proportion of carbon than either of the other kinds.



Coke Ovens, Pennsylvania

Coke is bituminous coal that has been sufficiently charred to remove its volatile elements. It is, therefore, an *artificial anthracite*. Coke is used in smelting and other processes, when smokeless fire is desired. From the volatile product of the coking operation illuminating gas is made.

Coal-tar is much employed to saturate the wood of harbor structures, to prevent the ravages of the *teredo*, or ship-worm.

By the distillation of coal-tar, the **aniline dyes** are produced in all tints and shades of colors. In recent years coal-tar dyes have almost entirely supplanted those of vegetable and animal origin. (See page 68.)

Creosote, sometimes distilled from coal-tar, is used as a deodorizer, and to prevent fermentation and putrefaction of food substances.

Most of the *anthracite* of commerce is mined in Pennsylvania. English coal is nearly all *bituminous*, as are also two-thirds of the American product. The deposits of the Rocky Mountain region are mostly *lignite*.

Deposits of coal exist in almost every country, but two-thirds of the world's coal-mining are done in **Great Britain** and the **United States,** followed in order by Germany, France, and Belgium. Vast beds of this mineral, that have been but little developed, exist in China, Japan, Russia, and Brazil. The coal-fields of the United States lie mainly in the Appalachian region and the central Mississippi basin. (See *Map*, p. 59.)

In 1890 the United States imported $3,000,000 worth of bituminous coal, mostly from British Columbia and Australia into our Pacific ports; and exported $7,000,000 worth of coal, half anthracite and half bituminous, to Canada, the West Indies, and Mexico.

8. PETROLEUM. — **Crude petroleum** is sometimes found oozing out of the earth as a colorless liquid. It readily absorbs oxygen from the air, and this converts it into "**mineral tar.**" When this process is continued, more oxygen is taken up, and evaporation goes on until the substance takes the more solid form of **asphalt.**

Asphalt is not artificially produced from petroleum, but is met with in nature already solidified from exposure to the air. It is sometimes called "mineral pitch." The principal use of this substance is for paving roadways and sidewalks. Asphalt is found in southern California, Venezuela, and Peru, and in many parts of the Eastern Hemisphere, but nearly all the trade supply of it is shipped from the British island of Trinidad. Here is an asphalt lake, a hundred acres in extent, and of unknown depth. This vast bed is leased and worked by an American company.

Petroleum, literally, "rock-oil," is so named because it is contained in natural underground reservoirs from which it is obtained by mining. It was known to exist in Asia thousands of years ago, but its possible usefulness was not realized until the Pennsylvania oil-fields were developed, about forty years ago. Its value for **lighting purposes** was then first ascertained, and refined petroleum has now become the common illuminant of the world.

The petroleum of commerce is almost wholly derived from two countries, — the United States and Trans-Caucasia.

(**a**) The **Caucasian oil-fields** were not actively developed till about the year 1880. The principal wells are in the vicinity of Baku on the Caspian Sea. From this place the oil is sent, in tank-cars and by pipe-line, to ports of the Black Sea. The petroleum fields of the Caucasus region are the richest in the world, but those of the United States are better worked, and supply far more oil to the world's market.

Petroleum is now the only fuel used by Caspian steamships. It is much employed also under locomotive boilers on the railways of southern Russia.

(**b**) **American petroleum** is of two qualities. The poorer, found in Ohio and California, is employed as **fuel**, being well adapted to that use in metal-working and glass-making. The finer quality of oil, used for **illuminating purposes**, is mined in a strip of country about 10 miles wide by 200 long, on the western slope of the Alleghany Mountains, extending from southwestern New York across the state of Pennsylvania into West Virginia.

Pennsylvania Oil-Wells

Some of this oil is transported in tank-cars, but most of it goes by **pipe-lines** from the Pennsylvania fields to Cleveland, Pittsburg, Buffalo, Brooklyn, Philadelphia, and Baltimore, where it is refined for the market. The Ohio wells are connected in the same way with Chicago.

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(c) **Feathers.** — The plumes and other fine feathers of tropical and other birds are in great demand for the ornamentation of head-dress. The finer feathers are costly, and their brilliant colors are now artificially imitated.

The plumes of the **ostrich** have always been highly prized, and in recent years ostrich-farming has sprung up in South Africa and elsewhere.

Birds of gorgeous plumage abound in the islands of the Indian Archipelago. The supply of feathers from that region comes to market through the hands of the Dutch.

The United States imported, in 1890, feathers, natural and artificial, to the value of $2,000,000, from France and England.

SUMMARY OF OUR FOREIGN TRADE IN CLOTHING MATERIALS

(Stated in Millions of Dollars: Census of 1890)

IMPORTS		EXPORTS	
Cotton and Products	30	Cotton and Products	274
Wool and Products	72	Leather and Products	14
Silk and Products	62	Furs	5
Flax and Products	21		
Leather and Products	34		
Furs	7		
Buttons	3		
Hats and Bonnets	3		
Feathers	2		
Total Purchases	234	Total Sales	293

In the last census year we sold more clothing materials than we bought. In brief, we may say that we *sell cotton*, and *buy silk and wool.*

The total length of American pipe-lines approaches 2000 miles. Petroleum is sent to foreign countries in ships provided with tanks for this purpose.

Petroleum, as fuel, is used in its crude form. For other purposes it is distilled.

Gasoline, the first and lightest product of the refining operation, contains much of the gaseous part of the oil, and is used to enrich coal-gas for illuminating purposes.

The next product is also inflammable, and is used for open-air lighting and in gas-making. It is sold under the trade name of "**naphtha**."

Benzine, the third product, is valued as a solvent for cleansing fabrics, and as an ingredient of paints and varnishes.

Kerosene is made in the next stage of the operation. This is the illuminating oil. It goes more generally to the other countries of the world than any other staple product of the United States.

Paraffin oil remains at this stage of the distillation. When this in turn is refined, a colorless waxlike substance, called **paraffin**, or "paraffin wax" is left. Paraffin is now used for making candles, having almost entirely superseded tallow, wax, and spermaceti for this purpose.

Paraffin also yields several burning and lubricating *oils*. The substance skimmed from these oils during the refining process is purified, and from it *vaseline* and other ointments are prepared.

In the opinion of geologists and chemists, the natural stores of petroleum are fixed in quantity and must in time become exhausted. The present production is conducted by wasteful methods.

In 1890 the United States exported *refined petroleum* to the value of $39,000,000, and *paraffin oil* to the value of $5,000,000. These products were sent to almost every country on the globe. In the same year we exported *crude oil*, *paraffin*, and "*naphtha*" to the total value of $10,000,000. These items went mainly to England, France, and Germany.

9. GLASS. — Glass is a brittle, lustrous, and very hard substance, which at a high temperature may be fused and molded, and which is not easily affected by acids. It is transparent or translucent, according as it is clear or colored. Glass is a poor conductor of heat. Its brittleness may be partly overcome by a process called "annealing."

The chief ingredients of glass as commonly manufactured are **silica**, in the form of pulverized quartz, flint, or sand; *lime*, in the form of chalk or marble; *potash; salts of soda; lead;* and *bleaching materials*. Glassworks are generally located where these substances may readily be procured.

The English glass-makers get their silica from the Isle of Wight. Much finer qualities are procured in Belgium and France. Excellent white silica is also found in western Massachusetts, and in Pennsylvania, near Pittsburg.

When the ingredients, compounded in suitable proportion, are melted together at great heat, the glass "metal," as it is called, is made to assume its various forms by (1) blowing, (2) casting, or (3) pressing in molds.

Crown-glass derives its name from the crown-like shape that it takes in the process of blowing. Common pane-glass, and plate-glass for windows and mirrors, are made from it.

Plate-glass of fine quality is cast in molds, rolled smooth, slowly cooled for several days, and then ground and polished.

Flint-glass, originally made from powdered flint, is a heavy and brilliant glass, used mostly for tableware and optical instruments.

Cut-glass is any variety of glass the surface of which has been ground and polished in facets or figures.

Glass **manufacture** is carried on very extensively in England, Germany, Belgium, France, and Bohemia in Austria. The best plate-glass is made in England, France, and Belgium. Bohemia is the greatest center for cut-glass. Bottles, vials, and small glassware are largely made in Germany, England, and France. In the United States the largest glassworks are in Massachusetts and New York, together with western Pennsylvania and West Virginia, where natural gas is available for fuel.

In 1890 the United States imported *bottles* from France, Germany, and England; *crown* and *cut-glass* from Austria; *mirrors* from Germany; *plate-glass* from Belgium, France, and England — to the total value of $7,000,000.

We exported in the same year $1,000,000 worth of glassware, distributed to many countries.

10. CLAY PRODUCTS. — Clay is the most abundant of mineral substances. By working, molding, and baking it is made into brick, terra-cotta, stoneware, earthenware, and chinaware.

Bricks are made from common clays. Such clays are found everywhere, and brick-making is, accordingly, a widely distributed industry. Bricks are mostly used in the neighborhoods where they are made.

Terra-cotta (Italian, "cooked earth"), also made from coarse clays, is chiefly used in architectural decoration. Its reddish color, as in the case of most brick, results from the iron which common clay contains, and which is oxidized, or rusted, in the baking process.

Stoneware is the name given to the coarser kinds of glazed ware. Finer products of the same kind are called *pottery*.

Earthenware is the general name applied to all the commoner sorts of vessels of baked clay. The familiar name of *crockery* refers especially to such earthenware as is in every-day household use.

China or **chinaware** is fine, translucent, or semi-translucent earthenware. It is called "chinaware," because it was brought from China and other parts of the far East three centuries ago, before anything like it had been made in Europe. The Portuguese traders who introduced it called it *porcelain*, a name still in use. In making this ware, a small proportion of lime is worked into the clay before it is baked.

In the making of chinaware and earthenware (*porcelain* and *crockery*), only the fine, light-colored clays that will bear fire without discoloration are employed. These have, in common, the title of **potter's clays**.

The finest of clays is **kaolin**, sometimes called *china-clay*, or *porcelain-clay*. It consists of the feldspar that has been washed and weathered out of granite or granitic rocks. This clay has been used by the Chinese from ancient times, and the name itself is a Chinese word. Most of the best working clays consist merely of kaolin mixed with powdered quartz, lime, and magnesia.

The **manufacture** of the various kinds of clay products involves several processes. The chief of these are mixing, grinding, and kneading the material; molding the doughy mass upon the potter's wheel; baking or "firing"; and, lastly, glazing and decorating. The baked product, before it is glazed, is called *biscuit*. Common decoration is done by transferring from paper the forms or designs that have been freshly printed upon it. The finer kinds of decoration are done by hand with mineral pigments. After decoration the wares are again fired.

The finest **porcelain** is made near Dresden, in Germany, at Sevres, in France, in the neighboring English counties of Staffordshire and Worcestershire, and to a less extent in Japan and China.

Most of the common **stoneware** and **earthenware** comes from England, Germany, and Austria.

A good deal of **crockery** is made in the states of New York, Pennsylvania, and Illinois. Various fine wares are produced in the extensive potteries at Trenton, in New Jersey, and at Cincinnati, in Ohio.

In 1890 the United States imported earthenware, stoneware, and chinaware to the value of $7,000,000, about half of it from England, and most of the rest from Germany, France, Austria, and Japan.

Our export of these commodities is very small.

11. PRECIOUS STONES. — Precious stones have been so called and regarded from ancient times, because of their rarity, luster, and durability, as well as for the beautiful colors of some of them, and the brilliancy and transparency of others. They are generally set in gold, and worn for personal adornment. Diamonds, rubies, and emeralds are the most valuable of precious stones.

The **diamond** is, with the exception of the Oriental or true ruby, the most costly of precious stones. Diamonds were once extensively mined in India, but the supply from that source is nearly exhausted. Those of the finest "water" come from the vicinity of Rio Janeiro, in Brazil. In amount of product, the richest deposits of these stones are at Kimberley, in South Africa. The blue, diamond-bearing earth of this field covers but a small area, and is owned and worked by an English company. The annual output of the Kimberley mines is estimated to be worth $5,000,000.

The **ruby** has a carmine-red color, sometimes shading to violet. On exposure to a high temperature, the stone becomes green, but regains its original color on cooling. Rubies have been found in Ceylon and other parts of British India, but the present supply comes wholly from Burmah.

The **emerald** has a rich green color, and is often quite transparent. The finest emeralds are procured from Colombia. Other sources of supply are Siberia and India.

The **sapphire**, a transparent bluish-green stone, comes almost entirely from Ceylon. The **amethyst**, once quite rare, is now freely supplied from many countries. The **topaz** is mined in Siberia, Brazil, Australia, and many other countries, and is often artificially colored. That variety of **opal** known as "precious opal," has a beautiful iridescence, and is highly valued as an ornamental stone. It is found in Hungary, Honduras, Australia, and Mexico. The **turquoise** is a fine, opaque, blue stone, supplied principally from Persia.

Most of the world's supply of precious stones is sent to Amsterdam, Antwerp, and London to be cut before being set. The manufacture of imitation "precious stones" is a considerable industry, especially in France.

In 1890 the United States imported *unset precious stones* and *imitation stones* to the value of $12,000,000, from England, France, Belgium, and the Netherlands.

SUMMARY OF OUR FOREIGN TRADE IN MINERAL SUBSTANCES

(Stated in Millions of Dollars: Census of 1890)

IMPORTS		EXPORTS	
Iron and Products	44	Iron Products	30
Tin	7	Copper	8
Coal	3	Coal	7
Gold	13	Gold	17
Silver	28	Silver	35
Glass and Glassware	7	Petroleum, etc.	54
Clay Products	7	Glassware	1
Precious Stones	12		
Total Purchases	121	Total Sales	152

From this summary it will be seen that the value of minerals sold by the United States in 1890 was one-quarter more than the value of those bought. But it is also to be noted that the balance of trade in these commodities would have been against us, but for our highly valuable export of *petroleum*.

CHAPTER VI

THE GREAT COMMERCIAL STAPLES

IV. MISCELLANEOUS COMMODITIES

1. TIMBER PRODUCTS. — Trees are the most generally useful products of nature. They exercise an influence upon climate; they supply the fuel more extensively used than any other; and from them we derive gums and resins, medicinal and tanning barks, dyewoods, drugs, and fruits. All kinds of structures are built from their timber and lumber, and wood forms the whole or part of furniture, woodenware, and almost numberless utensils and conveniences.

Timber is the name given to felled and sometimes to standing trees, while **lumber** is the wood of all kinds into which it is split and sawed. In other words, timber is the raw material of lumber, and the latter, in turn, is the raw material of wooden manufactures.

The Pines. — By far the most valuable of forest growths are the numerous varieties of cone-bearing evergreens, commonly grouped together under the name of "pines." These flourish mainly in the Northern Hemisphere. Important among them are the *white-pine*, the *yellow* or *Georgia pine*, the *Oregon pine*, and the *Norway pine*, as well as the various *cedars*, *spruces*, and *firs*. The lumber of all these trees is easily and economically worked. Tanner's bark, turpentine, and rosin (pine resin) are commercial products derived from the cone-bearing pines.

The **redwood pine**, plentiful in California, yields a very durable lumber of beautiful grain and color, which is susceptible of a high polish. It is used in interior finishing and cabinet work. The redwood is one of the most valuable of woods, and is just beginning to be appreciated. It is not easily burned, and for this reason is excellent for building purposes, especially for shingles.

The **Oregon pine** is exported from the Pacific States, mainly in the form of timber. The wood of this tree is very elastic and durable. Most vessels built on our Western coast are made of this pine.

The **Kauri pine** of New Zealand yields excellent timber, and a resin called "Kauri gum," much valued in the manufacture of varnishes. The larger proportion of Kauri resin is dug out of the ground where former trees have stood, and this fossil resin is more valuable than that recently formed.

There are several varieties of **cedar**, used in the manufacture of lead-pencils and cigar-boxes, and in cabinet work. Our market supply of this wood comes from Florida, Alabama, the West Indies, and Central America.

Hardwoods. — The principal hardwood trees, the timber of which is manufactured, are *oaks*, *walnuts*, and *chestnuts*. These are found in nearly all parts of the North Temperate Zone.

The various **oaks** supply lumber of the toughest and strongest kind. Oak is largely used in the manufacture of furniture and carriages. *Live-oak*, which flourishes in our Southern States, resists decay from the action of water, and is therefore well suited for shipbuilding. It is also used in mainly in the Appalachian region and the central Mississippi basin. (See *Map*, p. 59.)

In 1890 the United States imported $3,000,000 worth of bituminous coal, mostly from British Columbia and Australia into our Pacific ports; and exported $7,000,000 worth of coal, half anthracite and half bituminous, to Canada, the West Indies, and Mexico.

8. PETROLEUM. — **Crude petroleum** is sometimes found oozing out of the earth as a colorless liquid. It readily absorbs oxygen from the air, and this converts it into "**mineral tar.**" When this process is continued, more oxygen is taken up, and evaporation goes on until the substance takes the more solid form of **asphalt.**

Asphalt is not artificially produced from petroleum, but is met with in nature already solidified from exposure to the air. It is sometimes called "mineral pitch." The principal use of this substance is for paving roadways and sidewalks. Asphalt is found in southern California, Venezuela, and Peru, and in many parts of the Eastern Hemisphere, but nearly all the trade supply of it is shipped from the British island of Trinidad. Here is an asphalt lake, a hundred acres in extent, and of unknown depth. This vast bed is leased and worked by an American company.

Petroleum, literally, "rock-oil," is so named because it is contained in natural underground reservoirs from which it is obtained by mining. It was known to exist in Asia thousands of years ago, but its possible usefulness was not realized until the Pennsylvania oil-fields were developed, about forty years ago. Its value for **lighting purposes** was then first ascertained, and refined petroleum has now become the common illuminant of the world.

The petroleum of commerce is almost wholly derived from two countries, — the United States and Trans-Caucasia.

(**a**) The **Caucasian oil-fields** were not actively developed till about the year 1880. The principal wells are in the vicinity of Baku on the Caspian Sea. From this place the oil is sent, in tank-cars and by pipe-line, to ports of the Black Sea. The petroleum fields of the Caucasus region are the richest in the world, but those of the United States are better worked, and supply far more oil to the world's market.

Petroleum is now the only fuel used by Caspian steamships. It is much employed also under locomotive boilers on the railways of southern Russia.

(**b**) **American petroleum** is of two qualities. The poorer, found in Ohio and California, is employed as **fuel**, being well adapted to that use in metal-working and glass-making. The finer quality of oil, used for **illuminating purposes**, is mined in a strip of country about 10 miles wide by 200 long, on the western slope of the Alleghany Mountains, extending from southwestern New York across the state of Pennsylvania into West Virginia.

Pennsylvania Oil-Wells

Some of this oil is transported in tank-cars, but most of it goes by **pipe-lines** from the Pennsylvania fields to Cleveland, Pittsburg, Buffalo, Brooklyn, Philadelphia, and Baltimore, where it is refined for the market. The Ohio wells are connected in the same way with Chicago.

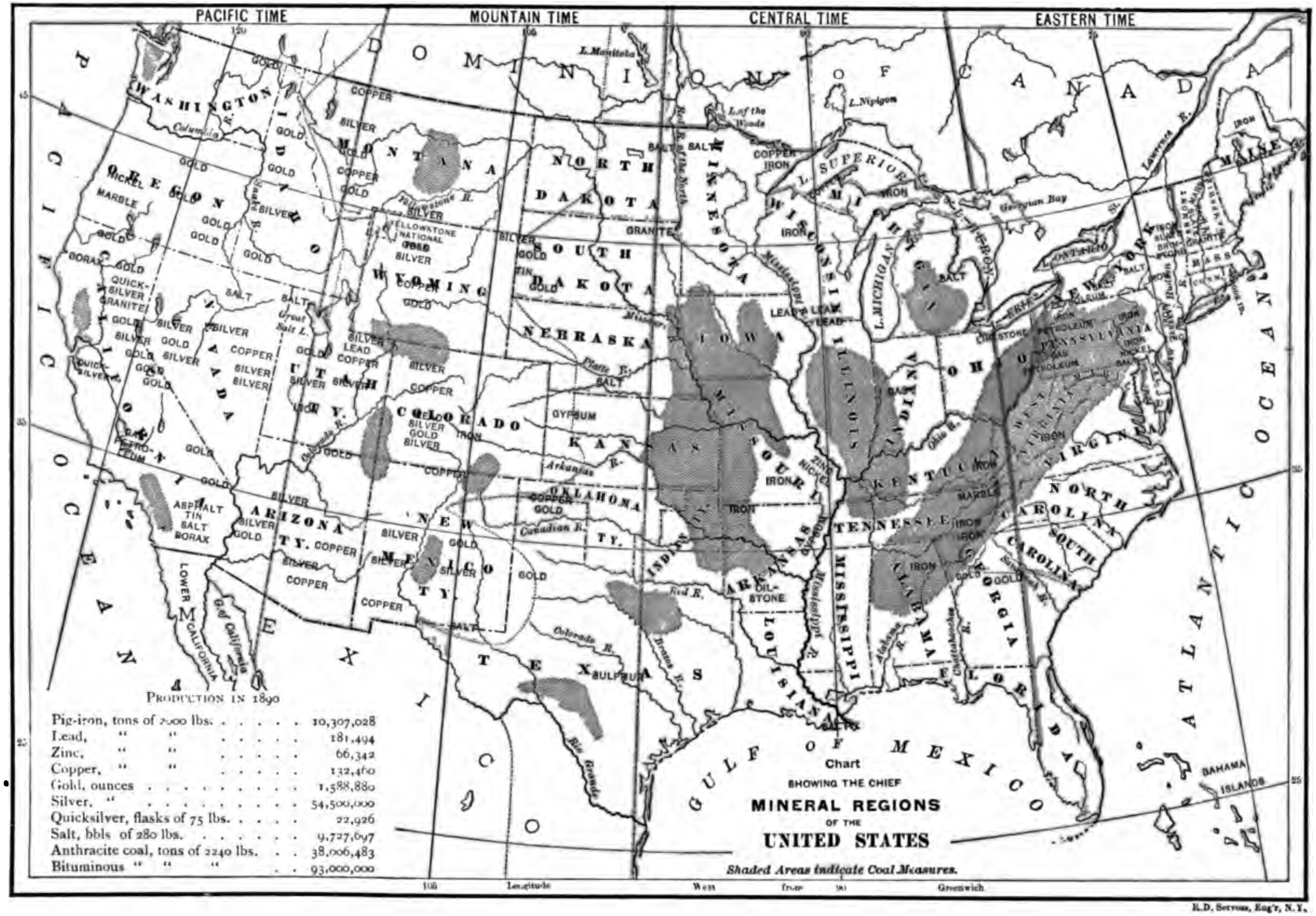

Chart showing the chief **MINERAL REGIONS** of the **UNITED STATES**

Shaded Areas indicate Coal Measures.

PRODUCTION IN 1890

Pig-iron, tons of 2000 lbs.	10,307,028
Lead, " "	181,494
Zinc, " "	66,342
Copper, " "	132,460
Gold, ounces	1,588,880
Silver, "	54,500,000
Quicksilver, flasks of 75 lbs.	22,926
Salt, bbls of 280 lbs.	9,727,697
Anthracite coal, tons of 2240 lbs.	38,006,483
Bituminous " " "	93,000,000

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an important export from Calcutta. The fiber is separated by steeping it in water.

The various **manufactures** of jute have long been centered in Scotland, especially at Dundee, Glasgow, and Aberdeen. It is the cheapest of textiles, and great quantities of it are made into bagging, carpet-linings, bale-covers, rugs, and coarse paper. It has a glossy luster, and is sometimes mixed with the cheaper grades of silk.

In 1890 the United States imported *hemp* to the value of $7,000,000 from the Philippine Islands and England; *jute* to the value of $3,000,000, from British India; *sisal* to the value of $7,000,000, mostly from Mexico; and *burlaps, bagging*, and other hemp and jute products, to the value of $12,000,000, from Scotland and British India.

3. TOBACCO. — Tobacco is a plant native to the Americas. It had long been cultivated, and smoked, chewed, and snuffed by the natives of the Caribbean coast and islands when these were first visited by the Spanish discoverers.

In the sixteenth century tobacco was introduced into Europe, and the cultivation of the plant has now extended to almost every land.

The sale of tobacco and its manufactured products is a source of revenue to nearly all governments. In France, Austria, Italy, and Spain this sale is a government monopoly.

About one-fourth of the world's annual product of tobacco is raised in the **United States**. Other countries in which tobacco-culture is largely carried on are **Cuba**, the **Philippine Islands**, **Turkey**, Java, Sumatra, and Brazil. The Cuban product is called "Havana tobacco," and that of the Philippine Islands is known as "Manila tobacco," taking their names from the port of shipment in each case.

The finest *qualities* of tobacco are grown in Cuba and Turkey. The bulk of the American crop is raised in **Pennsylvania**, **Ohio**, **Kentucky**, **Tennessee**, **Virginia**, and **North Carolina**. About half of this is exported in the leaf, and the preparation of the other half for use gives rise to important factory industries in all parts of the Union.

In 1890 the United States imported $18,000,000 worth of *leaf tobacco* from the Netherlands and Cuba; and $4,000,000 worth of *cigars* and *cigarettes* from Cuba.

In the same year we sold $21,000,000 worth of *leaf tobacco* to Great Britain, Germany, Austria, France, Italy, and Canada; and $4,000,000 worth of *tobacco products* to many countries, but in largest quantities to England and Australia.

4. DRUGS. — The principal drugs of commerce are *soda salts*, *potash salts*, *sulphur*, *lime chloride*, *cinchona*, and *opium*.

(a) Soda Salts. — The metal *sodium* never occurs pure in nature. In its combinations, or salts, it is a most abundant element, and there are few industries where chemicals are used in which these salts do not play an important part.

Sodium **Chloride** is **common salt**, abundant in sea-water, and found also in great masses beneath the earth's surface.

Nearly half the salt produced is got by evaporating **sea-water**. Turk's Island, in the West Indies, and the coasts of Spain, Portugal, and France furnish most of this.

Salt-beds are generally worked by means of borings and shafts. Through these fresh water is pumped into the beds, to be pumped out and evaporated as soon as it becomes saturated with salt. There are valuable salt-wells in France, England, and Germany. Others are situated at Syracuse, and at Warsaw, in New York State, and in the vicinity of Saginaw Bay, in Michigan.

The most famous mines of **rock-salt** in the world are in Austria. One mine near Cracow has been worked more than 600 years. Undeveloped deposits of this mineral exist in the state of Louisiana.

Salt is everywhere used for the preservation and seasoning of foods, especially meat and fish. It is abundant and widely distributed in nature, and hence forms but a small item in international trade.

The **nitrate** of soda occurs in vast beds in Chile and Peru. This is sometimes called *Chile saltpeter.* Nitric acid and fertilizers are made from it.

The **carbonate** of soda, or *sal soda,* sometimes called washing-soda, is used in great quantities in the manufacture of soap and glass. Much of it is produced from common salt. From the carbonate what is known as *caustic soda* is made, and this also is used in soap-making, as well as in the preparation of wood-pulp for paper-making.

The **bicarbonate** is the soda used in cookery.

The **sulphate**, or *Glauber's salt,* is used in medicine, and very largely in glass-making.

(b) **Potash Salts.** — The **nitrate** of potassium, otherwise known as *niter,* or *saltpeter,* is principally derived from Peru. It is used mainly in the manufacture of gunpowder and nitric acid, and to a slight extent in curing meats.

The **carbonate** and the **hydrate** are better known as *pearlash* and *caustic potash.* The latter is used in soap-making.

The **tartrate,** having in its crude state the trade name of *argol,* is, when refined, commonly known as *cream of tartar.* It has a strong acid taste, and exists in the juice of many fruits, especially the grape. It is deposited from wines on the sides of casks, and is, therefore, chiefly exported from wine-growing countries. Cream of tartar is a common ingredient in baking-powders, and is also employed to a small extent, owing to its cost, in dyeing and calico-printing.

(c) **Sulphur** is often found in combination with other substances, but it occurs alone in great masses near volcanoes out of which it has been thrown. Beds of sulphur exist in many countries, but nearly all the commercial supply of this substance comes from the island of Sicily, whence it is shipped in the crude state in small broken pieces. It is sold in the drug trade in the form of cast sticks, and in this condition is called brimstone (*burn-stone*).

Most sulphur is used in the manufacture of **sulphuric acid,** or *oil of vitriol.* This is one of the most important of chemical compounds because of its numerous applications in the arts. It is used in making bleaching-powders, in etching on iron, in petroleum-refining, and in the manufacture of sulphate of copper, or *blue vitriol,* much used in electrotyping and calico-printing.

Other products of which sulphur is an ingredient are gunpowder, cement for joining iron to stone, and alum sulphate used for sizing paper. It is also mixed with rubber and gutta-percha in the hardening or vulcanizing process. The gas of burning sulphur is employed in bleaching silk and wool, for disinfecting purposes, and in sugar-making to prevent the fermentation of cane juice and beet juice.

(d) **Lime Chloride** is the trade name of a compound known to chemists as *calcium hypochlorite.* It is the most important chemical substance used in bleaching and disinfecting, and is manufactured on a large scale in England, Germany, and Spain.

(e) **Cinchona** is the bark of several species of trees that are native to the Andes region. Hence the familiar name of "Peruvian bark." The manufactured extract, or active principle, is a bitter, white, crystalline substance, called sulphate of **quinine**. It is a valuable medicine, and is much relied on in the treatment of malarial fevers.

Several species of cinchona-tree have been introduced into the **East Indies,** and are there cultivated with such success that much of the world's supply of the bark now comes from the East through Dutch and English hands, whereas formerly it came from South America.

(f) **Opium** is the dried juice of the heads of the opium poppy. Almost all of it is produced in

India, China, Persia, and Asiatic Turkey. It is of great value as a medicine, as it has the property of relieving pain temporarily and inducing sleep.

Owing to the high value of this drug by the pound, a good deal of it is **smuggled** into countries that put a high import tax upon it. The British government holds the monopoly of the opium traffic in India.

In 1890 the United States imported drugs to the value of $16,000,000: *soda salts* from Chile and England; *argol* from Italy, France, Portugal, and Austria; *sulphur* from Italy and Japan; *salt* from England, the West Indies, Spain, and Portugal; *lime chloride* from England; *quinine* and *bark* from Germany, England, and the Netherlands; and *opium* from China, Turkey, England, and Canada.

In the same year we exported *manufactured drugs* to the value of $5,000,000, distributed to many countries.

5. DYES AND DYESTUFFS.— It was pointed out in treating of coal that a large proportion of the dyes used in manufactures and the arts are now derived from coal-tar. From this a substance known as *benzol* is made, which in turn yields, through a complicated chemical process, **aniline**. This is a colorless liquid when pure, and was first obtained by a chemist from indigo. It takes its name from *anil*, the Portuguese word for indigo.

From aniline, by combination with other materials, and by various chemical processes, dyes are now produced of nearly every color, and every tint and shade of color.

The invention and development of the various aniline dyes began about the year 1856. Since that time, the many arts and manufactures in which dyes are used have everywhere been adapted to new methods. Besides the dyeing of **textile fabrics** of all kinds, aniline colors are used in the manufacture of **inks**, **soaps**, and **cosmetics**, and in coloring wall-papers.

Nearly all dyeing was formerly done with coloring-materials of **vegetable** origin. A few substances, like cochineal, are from the **animal** kingdom. Some traffic is still carried on in these dyestuffs. Most important among them are *logwood* and *indigo*.

Logwood is the dark red heartwood of the Campeachy-tree of tropical America. It takes its name from the fact that it is sent to market in logs and blocks from which the bark and outside fiber have been removed. This wood contains a large percentage of *tannin*, a substance which is also found in nut-galls. Logwood is used for the production of cheap *blacks* and *browns*, and is extensively employed in **dyeing wools** and woolens, in **calico-printing**, and in the manufacture of **ink**.

Indigo is a dark blue, earthy substance, produced from the indigo-plant, now cultivated in the British, Dutch, and Spanish East Indies, and in Central America and Brazil. A century ago indigo was a valuable product of the State of South Carolina. The fine *blue* obtained from indigo is a color much valued for its permanence.

Cochineal is used chiefly in dyeing wool, in calico-printing, and for the production of *pinks* and *reds*. It is obtained from the dried bodies of insects that infest several varieties of cactus. It was formerly derived almost wholly from Mexico and Central America, but has been introduced into the Canary Islands, from which much of the supply now comes. The pigment, or paint, known as *carmine*, is a cochineal product.

Fustic, used in dyeing *yellow*, is produced from the wood of a tree which grows in the West Indies and Central America. **Annotto** is made from the pulp which surrounds the seeds of another tropical American tree. This dye is *orange-colored*, and is used in textile manufacture, and in dairy countries for coloring butter. **Madder** is an extract from the roots of a plant much cultivated in France and the Netherlands. From it dyes of *red* and *yellow* are prepared.

In 1890 the United States imported *aniline dyes* to the value of $2,000,000, mostly from Germany; *logwood and its extracts* to the value of $2,000,000 from the West Indies and France; and *indigo* to the value of $2,000,000 from British India and England.

6. INDIA RUBBER AND GUTTA-PERCHA. — These valuable staples are the hardened sap of several varieties of trees, and in their numerous industrial uses they greatly resemble each other.

(a) **India rubber** is derived from the juice of trees and plants that flourish in tropical countries. In tropical Africa a belt of rubber-yielding plants extends entirely across the continent. The development of the rubber industry in Africa seems of great promise under improved methods of preparation for market. The chief supply of rubber now comes from Brazil, where *caoutchouc* is the native name of it. **Pará**, near the mouth of the Amazon River, is the greatest rubber market in the world. Central America ranks second to Brazil in the production of this commodity. India "rubber" is so called because it was first brought from India, and was formerly used almost exclusively for rubbing out pencil-marks.

The rubber of the Amazon valley is collected by the Indian natives. Beginning at the highest point he can reach, the rubber-gatherer makes with his hatchet three incisions into, but not through, the bark of the tree. Under each of these gashes he then, by means of moistened clay, makes fast a little cup, into which the milky sap falls in rapid drops. The next morning the worker empties the cups, and fixes them below three new gashes lower down, continuing this process day after day till the level of the ground is reached. If no more than three incisions are made each day, and if the hatchet is not permitted to cut *through* the bark to the wood, the same tree will yield rubber for thirty or forty years.

To coagulate the rubber "milk," it is slowly heated and smoked in a rude earthenware furnace. The thickened oval mass which results is the **crude rubber** of commerce.

The annual product of rubber is estimated at 5,000,000 tons. Its **manufactures** are more varied and extensive in the United States than in any other country. Waterproof cloth, garments, and footwear; air-cushions; bags, water-bottles, and tubing; and articles for medical and surgical use, consume a large share of the rubber supply. When heated with sulphur under pressure, the product is called "vulcanized" rubber, "vulcanite," and "ebonite." This is much harder, more durable, and more elastic than crude rubber. It will take a high polish; and combs, buttons, electric insulators, and many other small articles are made from it.

(b) **Gutta-percha** is the hardened juice of several species of trees that grow in the Malay peninsula and adjoining islands. Immediately after the rainy season, the trees are felled, and their branches lopped off. The sap is then drawn away, boiled down to the desired thickness, and pressed into large balls weighing about a pound and a half, or sometimes into larger blocks. Its properties are very similar to those of caoutchouc.

Under the influence of heat gutta-percha becomes softened and is easily wrought. When slowly cooled it retains any shape that has been given to it. It resists the action of water, and a good deal of **piping** is made from it. Gutta-percha is also an excellent non-conductor of electricity, and thus furnishes good **insulating material** for ocean cables and electrical instruments.

In 1890 the United States imported crude rubber and gutta-percha to the value of $15,000,000, — the *rubber* from South and Central America; the *gutta-percha* from the East Indies, by way of England, France, and the Netherlands.

7. LIQUORS. — Liquors are commercially classed under the three heads of **wines, spirits,** and **malt liquors.** In one or another of these forms, liquors enter into the beverages of nearly all nations. The characteristic feature which these drinks have in common is that they contain *alcohol.*

Alcohol is a transparent, colorless, inflammable liquid. It is produced in all vegetable juices when they undergo **fermentation**, as in the case of grape-juice in wine-making, and of the infusion of barley or other malt used in the brewing industries. The percentage of alcohol in such fermented liquors as wine, cider, ale, and beer, is not large.

When fermented juices are distilled, the resulting product contains a much larger proportion of alcohol. In this way are made brandy from grapes, rum from sugar or molasses, and whisky from grain. These are, therefore, called spirituous liquors, distilled liquors, or **spirits**.

Alcohol is of great value in the arts and manufactures. It is especially important in the making of varnishes, medicines, and perfumes, but is also used in very many other ways. A kind of alcohol, sometimes called "wood spirits," is made from wood and other vegetable fibers. It is more expensive to make than the alcohol distilled from fermented liquors, but not being used in beverages, it is not taxed, and hence is cheaper. Alcohol for use in the industries is also distilled from molasses, and from potatoes and other starch-yielding plants.

(a) **Wines.** — From very ancient times the lands bordering on the Mediterranean Sea have yielded the grape in finest varieties. This fruit, however, is now cultivated in all parts of the world between 20° and 50° of latitude, north and south.

In our own country, **western New York, central Ohio,** and **southern California** supply excellent varieties of this fruit. The grape is indigenous to the United States, but the best American fruit is the result of graftings from European vines.

Most of the wines of commerce still come from Europe. That imported to this country is derived mainly from France, Germany, and Spain. French wines, about three-quarters of all we import, come in bottles; those of Germany and Spain, mainly in casks.

Sherry (from *Xeres*) is the principal wine of Spain, port (from *Oporto*) of Portugal, Burgundy of France, and various white wines, known as Rhine wines, come from Germany. Italian and Hungarian wines have for some years been steadily increasing in commercial consequence.

Raisins and brandy are other important products of vine-culture.

(b) **Spirits.** — *Brandy*, distilled from wine, is produced more largely in France than in any other country. In the United States this name is sometimes given to spirits distilled from the fermented juice of apples and peaches, when it is called cider-brandy or peach-brandy.

Whisky is distilled from grain, potatoes, and barley-malt, in Scotland and Ireland; and in great quantities from corn, rye, and wheat, in the United States.

Rum is distilled from sugar-products, especially from molasses. It is mostly made in the West Indies and Guiana, and under the name of arrack, in the East Indian islands.

Gin (from French *genièvre* = juniper) is simply alcoholic liquor, distilled from ferments of rye and barley, and flavored with juniper berries. It is extensively manufactured in the Netherlands, whence its familiar name of "Hollands."

(c) **Malt Liquors.** — The principal malt liquors are *beer*, *ale*, and *porter*. As the general name denotes, they are all prepared from infusions of *malt*. These liquors, however, all have an essential bitter principle which they owe to the blossoms of the *hop-plant*. Accordingly, hops are raised chiefly in countries, such as Germany, England, the Netherlands, Austria, and the United States, where brewing is largely carried on. The American crop of hops is mainly grown in the states of New York and Washington.

In 1890 the United States imported *wines* to the value of $9,000,000 from France, Germany, Spain, and Italy; *spirits* to the value of $2,000,000 from France, Great Britain, and the Netherlands; *malt liquors* to the value of $1,000,000 from Great Britain and Germany; and *hops* to the value of $1,000,000 from Germany.

Our exports, in the same year, consisted of wines and spirituous liquors to the value of $2,000,000, — the *spirits* to Germany, and the *wines* to countries of North and South America.

8. PAPER. — In remote antiquity the Chinese were familiar with the use of paper, as they were also the most civilized of mankind; and from them the art of paper-making slowly made its way into the countries of the Western world.

Various vegetable fibers, especially linen, cotton, whitewood, straw, hemp, and jute, are the raw materials of this industry.

The three general classes of paper are **writing-paper, printing-paper,** and **wrapping-paper.**

The best writing and printing papers are made from rags of linen and cotton. Fine qualities or wood-fiber are also used in the manufacture of printing-paper. Wrapping-paper of all grades is made from straw, hemp, and jute. Of these raw materials, rags and wood-pulp have now become important trade staples. The same may be said of two of the manufactured products, — writing-paper and books.

The records of knowledge, and of its increase year by year, have been preserved for us on *paper*. Without material record of some kind, most of this knowledge must have been lost, and the progress of the race would then have been slow and difficult. In ancient and medieval times all literature was in the *written* form, and the common people of every country knew nothing of it. After the invention of printing, and especially since the development of paper-making, knowledge has been diffused among the many. We may fairly say that books, newspapers, schools, and the post-office have resulted from the invention and use of paper, just as they in turn promote its constantly increasing production.

If, as is sometimes suggested, the *per capita* consumption of paper is a fair measure of the intelligence of a people, then, in their order, the United States, Germany, Great Britain, and France are the most advanced of nations in *general* culture. They are certainly the greatest consumers of paper in its various forms.

In the **production of paper** the United States ranks first, with Great Britain second, and Germany third in order. Paper rags are imported by us from many parts of Europe. Wood-pulp, from the easily worked woods, such as poplar, spruce, and cottonwood, is extensively used in the paper-mills of New England, New York, Pennsylvania, and Michigan. Some of this pulp is imported from Europe and from Canada.

Previous to the first years of the present century, all paper was made by hand processes. Machine-made paper is now universally used.

The various fibers used in paper-making are first reduced to a pulp by being softened in a hot, alkaline solution. This pulp, having been bleached and, in the case of some qualities, mixed with sizing, is distributed equally on an endless sheet of wire cloth. Through this sheet most of the water drains off, leaving the fiber in a thin, even film, which is afterwards consolidated by pressure. The sheet, which may be of any desired length, is slowly dried, then cut, and finally calendered between hot iron rollers.

In 1890 the United States imported *rags* to the value of $5,000,000 from Germany, Great Britain, Italy, Belgium, and Japan; *wood-pulp* to the value of $2,000,000 from Germany, Sweden, Norway, Austria, and Canada; besides *paper* and *paper goods* to the value of $3,000,000, and *printed matter* to the value of $4,000,000 from Germany and England.

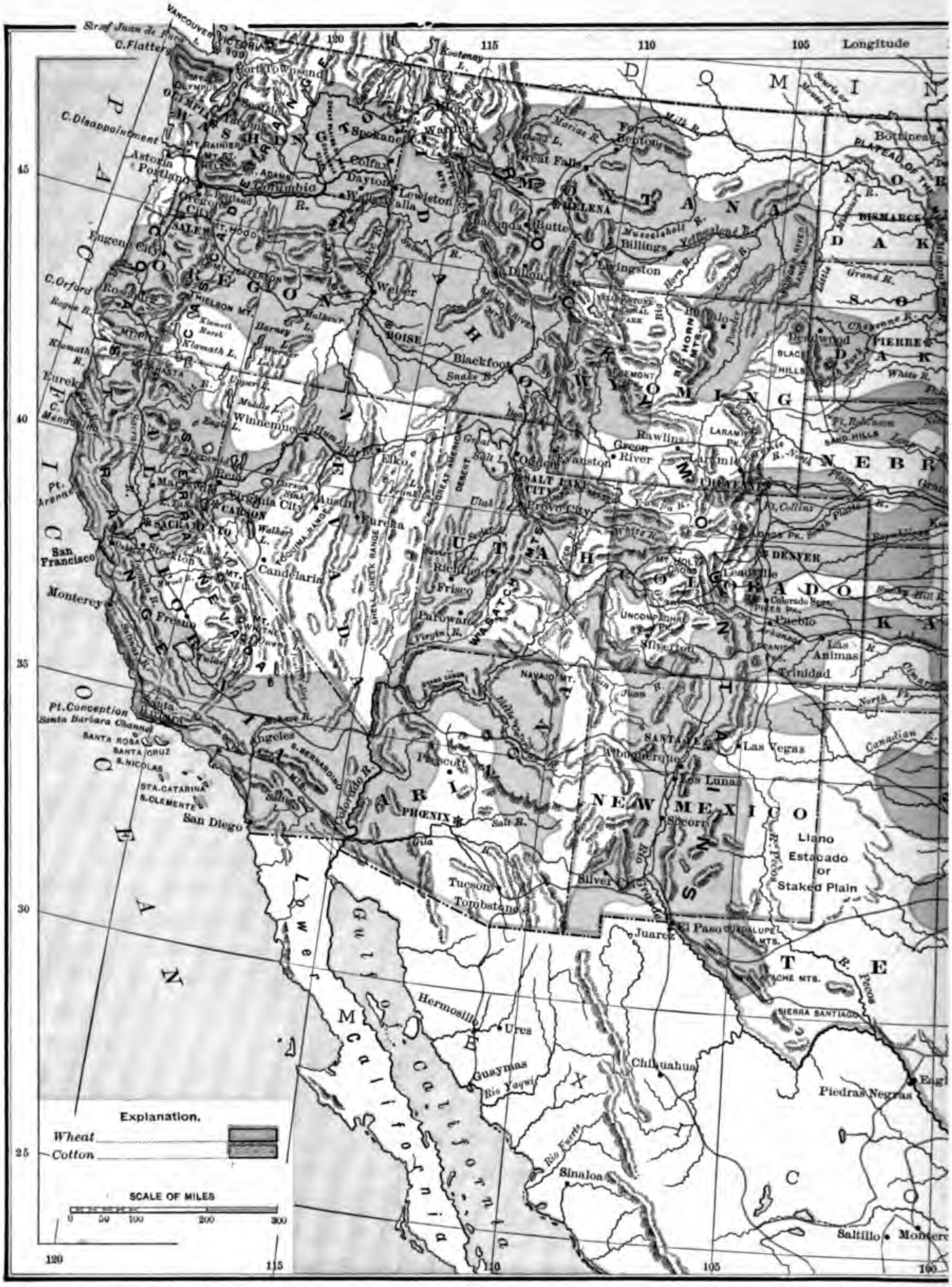
In the same year we sold books, paper, and paper goods to the value of $3,000,000 to other English-speaking countries, and to Central and South America and the Hawaiian Islands.

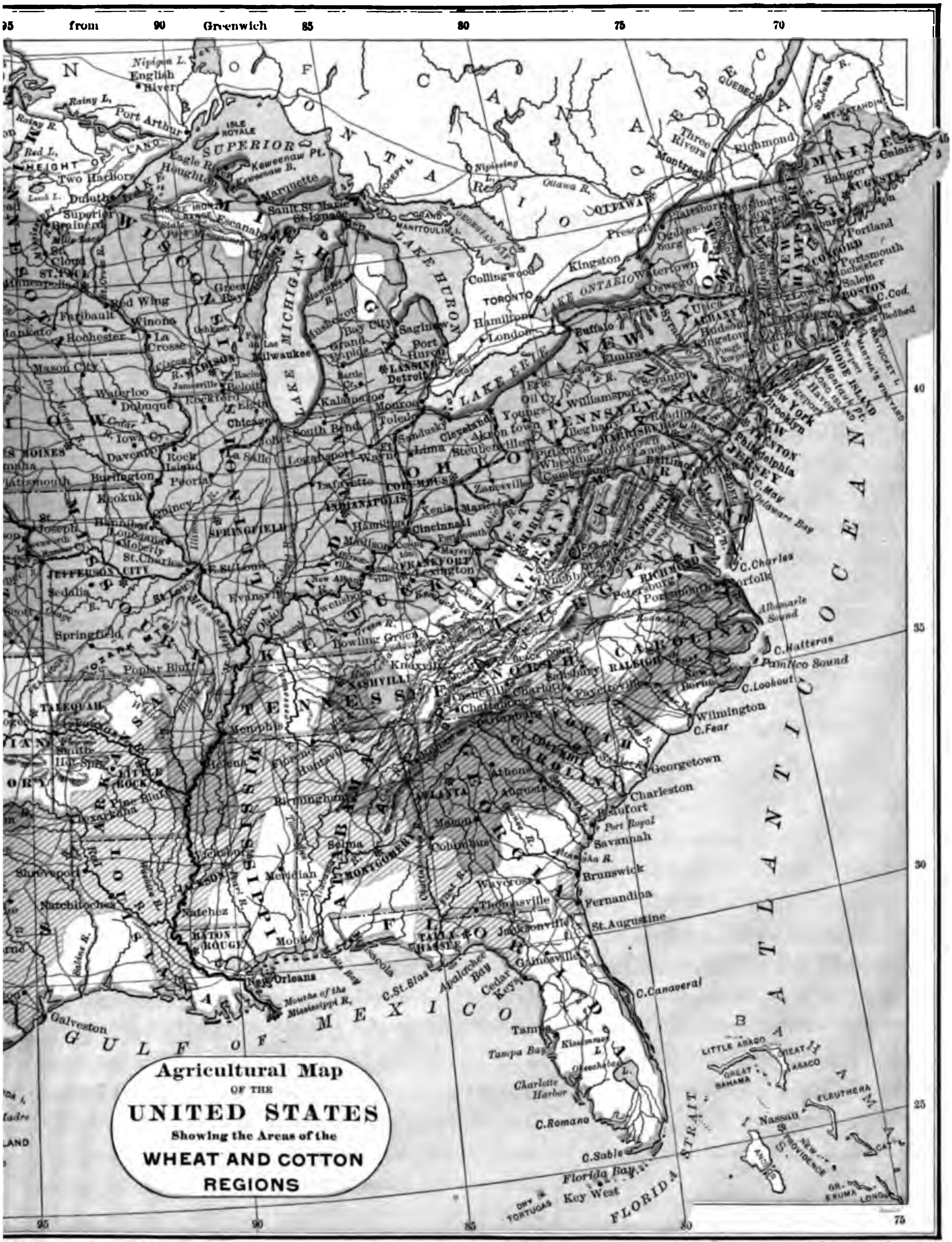
SUMMARY OF OUR FOREIGN TRADE IN MISCELLANEOUS COMMODITIES

(Stated in Millions of Dollars: Census of 1890)

IMPORTS		EXPORTS	
Timber Products	17	Timber Products	36
Hemp, Jute, and Products	29	Tobacco and Products	25
Tobacco and Products	22	Drugs	5
Drugs	16	Liquors	2
Dyes and Dyestuffs	6	Paper Products	3
Rubber and Gutta-percha	15		
Liquors	12		
Hops	1		
Paper and Products	14		
Total Purchases	132	Total Sales	71

The great staples we have now considered, though few in number, yet form, when taken together, **seven-eighths** *in value of our total imports, and* **eight-ninths** *of our total exports.*


Longitude
120
115
110
105
100
45
40
35
30
25
Str. of Juan de Fuca
C. Flattery
Vancouver
Victoria
Port Townsend
Olympia
C. Disappointment
Mt. Rainier
Mt. St. Helens
Mt. Adams
Astoria
Portland
Columbia R.
Oregon City
Salem
Mt. Hood
Eugene City
C. Orford
Roseburg
Rogue R.
Klamath R.
Klamath L.
Eureka
C. Mendocino
Mt. Shasta
Pt. Arena
San Francisco
Sacramento
Stockton
Monterey
Fresno
Mt. Whitney
Tulare L.
Pt. Conception
Santa Barbara Channel
Santa Rosa
Santa Cruz
S. Nicolas
Sta. Catarina
S. Clemente
Los Angeles
S. Bernardino
San Diego
Salton L.
Colorado R.
Spokane
Colfax
Dayton
Walla Walla
Lewiston
Weiser
Boise
Blackfoot
Snake R.
Harney L.
Malheur L.
Winnemucca
Humboldt
Reno
Virginia City
Carson
Walker L.
Austin
Eureka
Candelaria
Elko
Great Salt L.
Ogden
Salt Lake City
Provo City
Utah L.
Sevier L.
Richfield
Frisco
Parowan
Virgin R.
Wasatch Mts.
Evanston
Green River
Rawlins
Laramie
Cheyenne
Laramie Pk.
Fort Benton
Great Falls
Helena
Butte
Anaconda
Dillon
Billings
Livingston
Musselshell R.
Yellowstone R.
Milk R.
Marias R.
Kootenay L.
Big Horn Mts.
Fremont Pk.
Buffalo
Deadwood
Black Hills
Pierre
Bismarck
Bottineau
Plateau of the Coteau
Grand R.
Cheyenne R.
White R.
Sand Hills
Ft. Robinson
Ft. Collins
Denver
Leadville
Colorado Springs
Pikes Pk.
Pueblo
Mt. Holy Cross
Uncompahgre
Silverton
Trinidad
Las Animas
Spanish Pks.
San Juan R.
Navajo Mt.
Grand Cañon
Little Colorado R.
Prescott
Phoenix
Salt R.
Gila R.
Tucson
Tombstone
Santa Fe
Las Vegas
Albuquerque
Los Lunas
Socorro
Silver City
Rio Grande
R. Pecos
Llano Estacado or Staked Plain
El Paso
Juarez
Guadalupe Mts.
Apache Mts.
Sierra Santiago
Canadian R.
North Fk.
Republican R.
Platte R.
Hermosillo
Ures
Guaymas
Rio Yaqui
Chihuahua
Piedras Negras
Eagle Pass
Rio Fuerte
Sinaloa
Saltillo
Monterey
Gulf of California
Lower California
PACIFIC OCEAN
DOMINION
WASHINGTON
OREGON
CALIFORNIA
IDAHO
NEVADA
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
TEXAS
MEXICO
Sierra Nevada
Cascade Range
Coast Range
Explanation.
Wheat
Cotton
SCALE OF MILES
0
50
100
200
300



Agricultural Map
OF THE
UNITED STATES
Showing the Areas of the
WHEAT AND COTTON REGIONS

R. D. Servoss, Eng'r., N.Y.

CHAPTER VII

THE UNITED STATES

I. GENERAL VIEW

1. SITUATION AND EXTENT. — The territory of the United States, Alaska excepted, lies wholly within the North Temperate Zone. It covers the continent from the Atlantic Ocean to the Pacific, and extends from the Great Lakes on the north to the Gulf of Mexico on the south.

The average length of our country from the Atlantic to the Pacific coast is about 2500 miles, and the average breadth from north to south is about 1300 miles. The total area, including Alaska, is in round numbers three and one-half millions of square miles, nearly as great a surface as that of all Europe.

2. PHYSICAL FEATURES. — (a) **Climate.** Although the states of our Union are all in the Temperate Zone, yet it is to be observed that five of them have the 49th parallel of latitude for a northern boundary, while Florida extends southward as far as the 25th parallel. Between these extremes of latitude there are corresponding differences of climate, from the long, severe winters and the short, hot summers of the north, to the more equable, sub-tropical seasons of the south. In the same latitudes the climate of the Pacific coast is much milder than that of the Atlantic States. Winter in California is merely a rainy season.

In the Gulf States and on the coast of Washington and Oregon the **rainfall** is copious. In the Atlantic States, especially near the seaboard, the supply is less, but abundant. In the northern half of the Mississippi valley the rainfall, though somewhat smaller still, is distributed with considerable evenness throughout the year. Over the greater part of the Pacific Highland the annual fall is scanty, while in parts of Utah, Nevada, Arizona, and southeastern California there is no rainfall whatever.

(b) **Surface.** — The surface of our country is greatly diversified. Not far from the Atlantic coast, and having a general direction parallel with it, extends, from Maine almost to the Gulf of Mexico, the Appalachian Mountain System. The various ranges that make up this system, together with the lands they have uplifted above the coast level, are known as the **Atlantic Highland**. Occupying most of the western part of our country, and similarly extending in a general northerly and southerly direction, are the many ranges of the Sierra Nevada and Rocky Mountain systems. These, with the plateaus that lie between them, constitute the **Pacific Highland.**

Between these highlands, and occupying the greater part of the interior of the United States, is the vast basin of the Mississippi River and its tributaries. This region is called the **Central Plain.** The narrow strip of sloping plain which lies between the Atlantic Highland and the eastern coast is known as the **Atlantic Plain.** The much smaller area between the Pacific Highland and the western coast is called the Pacific Slope, or **Pacific Coast Plain.**

On our northern boundary several states contribute waters to the lakes which border upon them. The State of Michigan, in particular, has most of its boundaries formed by four of these lakes. These areas of our northern states form part of what is called the **Great Lakes Basin**.

(c) **Drainage.** — Of the drainage systems of the United States the most important two — that of the Mississippi and that of the Great Lakes — have already been mentioned. The **Mississippi system** drains more than half of the area of the United States, intersecting or bordering upon two-thirds of the states and territories. Fifty-seven tributaries are comprised in this system. Of these, by far the most important are the Missouri and the Ohio. Other great affluents are the Arkansas and Red rivers in the lower part of the Central Plain.

Of the **Great Lakes**, one, Lake Michigan, is wholly within our borders, and the other four form a considerable part of the northern frontier of the Union. Further to the east, but also tributary to the St. Lawrence River, is **Lake Champlain**. This body of water, though more than 100 miles in length, is much smaller than any of the Great Lakes. It lies almost wholly within the territory of the United States.

Crossing the Atlantic Plain in a general southeasterly direction are numerous rivers, most of which are broken by rapids or falls, so that they are navigable only in their lower courses. Three of these rivers, the **Hudson**, the **Delaware**, and the **James**, are of great volume, and afford unbroken waterways for many miles into the interior.

Flowing into the Gulf of Mexico, but forming no part of the Mississippi system, are numerous rivers which play an important part in the industries and trade of the Southern States. Of these rivers the greatest is the **Rio Grande**, which has its headwaters in Colorado, and forms the boundary between Mexico and the state of Texas. This river is navigable only for vessels of light draught.

The rivers of the Pacific slope are relatively few. In the far northwest is the **Columbia**, which, in the lower part of its course, separates the states of Washington and Oregon. The long, narrow, and highly fertile valley of California is watered in its northern half by the **Sacramento** River, and in the southern half by the **San Joaquin**. In the southwest is the **Colorado**, which pours into the Gulf of California most of the drainage of Utah and Arizona.

(d) **Coast.** — More than half the boundaries of the United States consist of coast-line upon the two oceans and the Gulf of Mexico. The **Atlantic** and **Gulf** coasts are irregular, and deeply indented by estuaries near the mouths of many of the rivers. Large bays and safe and commodious harbors are numerous on the Atlantic seaboard from Maine to South Carolina. Long Island Sound, Delaware Bay, and Chesapeake Bay are the largest of these arms of the sea. On the **Pacific** side of the continent there are but three great harbors, — Puget Sound, and the bays of San Francisco and San Diego.

3. NATURAL RESOURCES. — The vast territory of the United States, with its varieties of climate, its forest-covered mountain ranges, its well-watered plains, and its rich mineral deposits, possesses natural resources of the greatest diversity.

The **Atlantic Plain** has a generally fertile soil, numerous rivers affording water-powers in their upper courses and navigable channels nearer the coast, besides the great commercial advantage of proximity to the eastern seaboard.

The **Atlantic Highland** is for the most part covered with hardwood forests, and contains valuable deposits of coal, iron, and petroleum.

The chief natural advantages of the **Central Plain** are its vast area of fertile soil, its navigable rivers and lakes, and its mines of coal, iron, copper, and lead. In the northern part, at the head of navigation on many of the rivers, are fine water-powers.

The **Pacific Highland** is richer in deposits of metallic ores than any other region in the world. Gold, silver, copper, and lead are the principal products of the mines. Cone-bearing trees of many varieties cover a large part of this area, especially in the northwest. In the **valley of California** the soil is of extraordinary fertility.

4. POPULATION: ELEMENTS AND DISTRIBUTION. — The population of the United States, according to the census of 1890, is in round numbers 63,000,000. The center of population was, in that year, about fifty miles southwest of Indianapolis. A glance at the map will show that this point is somewhat to the north and greatly to the east of the *geographical* center of the states. Accordingly, expressing the fact in other terms, we may say that the North and the East are the most densely peopled parts of our country. In 1890 the Atlantic and North Central states contained **nearly five-sixths** of the total population of the Union.

In 1790, a century earlier than the last census year, the population of the young republic was less than 4,000,000. The majority of the people were of **English** and **Irish** blood, though the **Germans** of Pennsylvania and the **Dutch** of the Hudson valley formed important elements. All the population was settled on or near the Atlantic Coast Plain. Most of the present inhabitants of our country are descendants of these Americans of 1790.

During the last fifty years there has been a large **immigration** from the British Isles and Germany, and in the last decade from Italy, the Scandinavian peninsula, Hungary, Russia, and the Province of Quebec. Almost all of the immigrants have settled in the **northern half** of our country — the French Canadians in New England and New York, the Swedes mainly in the upper Mississippi States, while the newcomers of other nationalities are widely distributed.

Immigrants from Europe have settled in the northern states of our Union, partly because most of them have landed at the northern port of New York, but largely because the climate of this part of America is not much unlike that of northwestern Europe, from which the most of them have come. Moreover, the earlier immigrants had nearly all established themselves in the North, and their presence in this section of the country has naturally attracted to it later comers of the same European nationalities.

About one-tenth of the American people are **negroes**, the descendants of blacks brought from Africa as slaves. Nearly all of them are in the **southern half** of our country, where they are, and their ancestors for several generations have been, native to the soil.

There are 250,000 **Indians**, descendants of the aboriginal Americans, now living in the United States. About one-fourth of them have their homes in Indian Territory, and are peaceful and considerably civilized. The rest occupy lands reserved for their use in remote and unsettled parts of the national domain. These Indians of the "reservations," as they are called, are more or less wandering and warlike. The United States government contributes to their support, and represses their occasional outbreaks.

About 100,000 **Chinese** are widely distributed throughout the cities and towns of the Union. The majority are in the Pacific States, where they are employed as day-laborers and domestic servants; those living in the eastern half of our country are nearly all laundrymen. The Chinese have not crossed the Pacific with the intention of staying here, or of becoming American citizens. Nearly all of them expect to return to China, and recent laws of Congress are intended to prevent the coming amongst us of other laborers of their race.

5. SOURCES OF THE PRINCIPAL NATURAL PRODUCTS. — We have already seen that in order to supply his wants, man must always, as the first step, apply his labor to such natural resources as he finds about him. And it is plain that the first or raw products of industry must come from either the land or the sea; that is, from the **fields**, the **mines**, the **forests**, or the **fisheries**.

Of the population of the United States, about one-half is dependent on **agriculture**; one-fourth on **manufactures** and **mining**; and the larger part of the remaining fourth is occupied either in wholesale and retail **trade**, or in the various departments of the business of **transportation**.

The numbers engaged in lumbering and the fisheries, though considerable, form but a small percentage of the total population. The raw products of these industries have been sufficiently considered in the foregoing chapters.

(a) **Products of Agriculture.** — Four of our great staples — cotton, wheat, corn, and tobacco — are partly used at home, and *partly sold to foreign countries.*

Cotton is, commercially considered, the most valuable field product of the United States. The annual yield of this textile fiber is about 7,000,000 bales. The cotton-growing region includes Georgia, the Carolinas, Arkansas, Tennessee, and all of the Gulf States. Our country produces more **wheat** than any other in the world. The richest wheat-fields are in the northwestern part of the Central Plain, and in the states of the Pacific slope. The annual crop of **Indian corn** is about 1500 millions of bushels. This cereal flourishes in the region south of the wheat-producing area; that is, in the states that occupy the central part of the Mississippi basin. **Tobacco** is a staple field product of Ohio, Pennsylvania, Kentucky, Virginia, Tennessee, and North Carolina.

Crops that enter *only into domestic trade,* because wholly consumed at home, are: **Oats,** raised in great quantities in Iowa, Illinois, and all the Lake States; **rice,** cultivated near the lower Atlantic and Gulf coasts; **sugar,** raised in Louisiana and Florida; and **hops,** grown in the states of Washington and New York. **Hay, potatoes** and other root-crops, and most **fruits** are products of great aggregate value, but they are seldom transported far from the places where they are grown.

The **grape** has no commercial importance until converted into wine, but wine-making is carried on not far from the seats of vine-culture. The chief of these are in California, Ohio, North Carolina, and western New York. This industry is receiving greater attention every year.

Cattle, sheep, and *swine,* being dependent on the natural and cultivated fruits of the soil, may be considered under the head of agriculture.

The greater part of our **beef** supply is raised on the vast grassy plateau that lies to the east of the Rocky Mountains. **Hides** become a commodity of trade at the various points where the beef is dressed for market. **Cheese** is mainly derived from New York and the other states that border on the Great Lakes. **Wool** and **sheepskins** come from Ohio, Illinois, Texas, and the Pacific States, and **pork products** from the states of the Central Plain, in which corn is grown for the fattening of livestock.

(b) **Mineral Products.** — Our country is rich in a great variety of mineral deposits. Of coal, iron, and copper, the product surpasses that of any other country in the world. The precious metals, petroleum, lead, salt, and building-stone also abound.

Deposits of **coal** exist in nearly all the states of the Union — anthracite in Pennsylvania only, bituminous coal in that and other states, and lignite in the Western Highland. Ore-beds of **iron** are as widely distributed. **Copper** is found in Montana, Arizona, New Mexico, and Michigan. About half the world's product of **gold,** and one-third of the product of **silver,** are mined in the Pacific Highland. **Petroleum** is found chiefly in Pennsylvania and Ohio; **lead,** in Colorado, Missouri, and the region where Wisconsin, Illinois, and Iowa meet; **salt,** in New York, Michigan, West Virginia, and Louisiana; and **building-stone** of various kinds in many of the states, but especially in those of the Atlantic Highland. (See *Map,* page 59.)

6. DISTRIBUTION OF MANUFACTURES. — Ordinary handicrafts, carried on without the help of machinery, have little tendency to localize themselves. The shoemaker, the blacksmith, and the carpenter ply their trades in every village. So, also, the saw-mill and the flour-mill are set up wherever timber is cut or grain is cultivated.

The highly organized **manufactures**, on the other hand, which require complex machinery and systematic division of labor, tend to group themselves in special localities. In general, it will be found that density of population and extensive and diversified manufacturing go together. Large numbers of men living in cities are readily organized in the different branches of mechanical industry, while every large city is a market for labor, and thus draws to itself additional population.

Among **natural causes** that have led to the establishment of great factory industries are: nearness to mineral deposits, nearness to water-powers, and situation upon good harbors and navigable rivers and lakes. Thus, Pittsburg and Birmingham owe much of their prosperity to coal and iron deposits near by; Lowell, Paterson, and Minneapolis to the water-powers of the Merrimac, Passaic, and Mississippi rivers: New York and San Francisco to their splendid, landlocked harbors; and St. Louis and New Orleans derive most of their importance from their commanding situation on the Mississippi.

The railroad and the canal are **artificial works** which have had a similar influence in concentrating population and building up industries at favored points. Thus Indianapolis and Kansas City owe their development largely to the railway systems that center in them; while Buffalo, at the lake terminus of the Erie Canal, and Troy at the point where the tidewater of the Hudson meets the Erie and Champlain canals, are cities of great industrial activity.

There is one section of the United States in which population is densest; deposits of coal, iron, copper, and petroleum are richest; water-powers most abundant; and good coast harbors most numerous. In this section are the Great Lakes, four-fifths of the railway mileage of the country, nearly all of its canals, besides many navigable rivers. If we divide the United States into four sections by the 100th meridian and the 38th parallel, we shall find that all these natural and artificial advantages for manufacturing industries are in **the northeastern quarter** of the Union. Here manufactures have been longest established, and in certain industries a degree of excellence has been reached that is not equalled in any other country. In firearms, watches, sewing-machines, and other precise mechanisms, an interchange of parts is made possible by machine-work so exact that the unassisted hand could not accomplish it.

The **leading states in manufactures,** in the order of the value of their products, are: New York, Pennsylvania, Massachusetts, Illinois, Ohio, and New Jersey. New Hampshire, Rhode Island, and Connecticut, though small in area and population, are busy manufacturing states. Michigan, Wisconsin, Indiana, and Missouri have varied factory industries, increasing in number and importance.

In the region where Tennessee borders upon Alabama and Georgia there has been in recent years an extraordinary development of the rich coal and iron deposits which exist in that section of the **Southern States.** Being thus provided from its own mines with coal for engine-boilers and iron for machinery, the South has built many mills for the spinning of its cotton; and other factory industries, especially in the three states just named, have sprung up.

There are in the United States about 250,000 manufacturing establishments, employing 3,000,000 operatives, and having an annual product of the value of 5000 millions of dollars.

7. ROUTES OF DOMESTIC TRADE. — Transportation by water being far cheaper than land carriage, the navigable rivers, lakes, and coast-waters of the United States, together with the canals that connect them, form a system of domestic trade-routes fully as important as that furnished by the railways.

(a) **Rivers.** — Of the rivers of the country, the **Mississippi** and its numerous affluents make up a system of the greatest commercial consequence. By means of barges and steamboats of light draught it provides transportation for the bulkier staples produced in the Central Plain. The principal items in this traffic are coal, iron-ore, petroleum, cotton, grain, sugar, and cotton-seed and its oil.

The large cities situated on these waterways — Pittsburg, Cincinnati, Louisville, St. Louis, Kansas City, Minneapolis, St. Paul, Memphis, and New Orleans — whose early prosperity was due to river traffic, are still greatly benefited by it. The relative trade consequence of all river-systems has been somewhat diminished by the multiplication of railways. This is especially true of the Mississippi.

The **Hudson River** derives its chief importance from the fact that it forms part of a continuous water-route between the Atlantic seaboard and the states which border on the Great Lakes.

The **Delaware River** is navigable to Trenton, and provides a highway for the coastwise trade of Philadelphia, especially in the item of coal. At Chester and Wilmington on its banks are great shipyards.

(b) **Lakes.** — The **Great Lakes** which form part of our northern boundary are a busy commercial highway, except during the winter, when navigation is obstructed by ice. There are now afloat upon this chain of inland seas 2000 American vessels. The steam marine of the lakes has a greater tonnage than have the sailing-craft, and many of the steamers are of the most approved type of naval architecture. The sailing-vessels are mostly three-masted schooners.

Whaleback Steel Barges, Great Lakes

There is a vast traffic between Buffalo, at the western extremity of the Erie Canal, and the ports of lakes Erie, Huron, Michigan, and Superior to Duluth, the eastern terminus of the Northern

Pacific Railway. The cargoes consist mostly of coal and manufactured goods going west, and of iron, copper, grain, and lumber going east. Other important cities on the Great Lakes, named from east to west, are Oswego, Cleveland, Toledo, Detroit, Chicago, and Milwaukee.

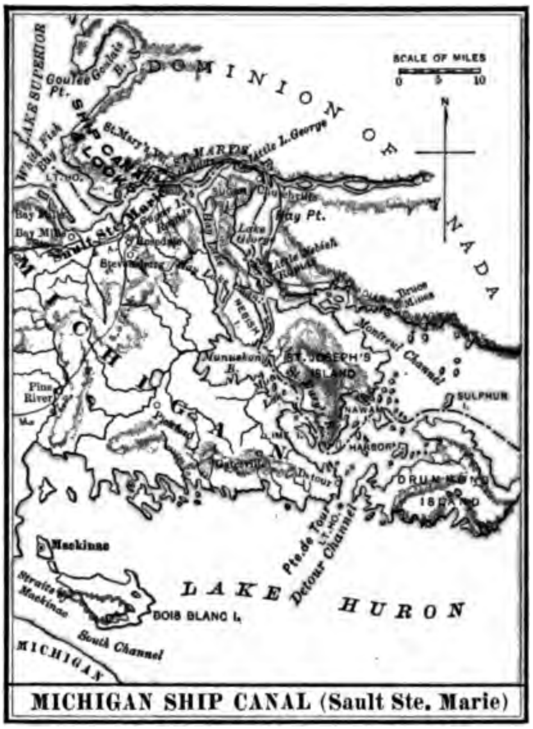
The larger part of the total shipping of the Great Lakes hails from Chicago, Detroit, Milwaukee, West Superior, Toledo, Cleveland, and Buffalo. The largest shipyards are those of Cleveland and Bay City. From these a new type of steam-freighters, called "whalebacks," have recently been launched. These steamships are built of iron, have great stowage capacity, and because of their novel deck-shape are especially seaworthy.

The only other lake in the United States that has a large commerce is **Lake Champlain.** It forms part of the St. Lawrence drainage system, and has canal communication with the Hudson.

(c) **Canals.** — The canals of the United States have a total length of about 4000 miles. Those of Pennsylvania and Maryland are principally useful for floating iron and coal to the cities of the coast, in exchange for general merchandise.

The **Erie Canal,** connecting the Hudson River with the Great Lakes, has already been mentioned. This important canal is now free of tolls. It has as feeders the Oswego, the Black-River, the Cayuga, and the Seneca canals. About 2000 boats, each with a carrying capacity of 6000 to 8000 bushels of grain, or a corresponding bulk of other products, are in use on this waterway in the open season. The round trip between Buffalo and New York, by way of the Erie Canal and Hudson River, consumes about a month.

The **St. Mary's Falls Canal** avoids the falls of St. Mary's River between lakes Superior and Huron. The canal as first constructed in 1855 had a depth of twelve feet. In 1881 this was increased to sixteen feet. In the same year the canal passed into the control of the United States government. It is now toll free, and is being deepened to twenty feet. In the seven months of the year in which the lakes are open to navigation, more vessels and more tonnage pass through this canal than through the Suez Canal during the entire year. This important gateway of trade is only one mile in length.



MICHIGAN SHIP CANAL (Sault Ste. Marie)

Other busy canals are the **Champlain,** which connects the Hudson River with Lake Champlain and thus with the St. Lawrence system; the **Raritan,** which connects the Delaware River with Raritan Bay; and the **Ohio,** which connects Lake Erie with the Ohio River.

Welland Canal is a Canadian work which connects lakes Erie and Ontario. It is made necessary by the rapids and great fall of Niagara River. Further east several short canals avoid the rapids of the

St. Lawrence, and thus the waters of the Great Lakes are commercially connected with the seaboard at the mouth of that river.

Before the introduction of railways certain canals, such as the Erie and the Chesapeake and Ohio, were relatively more important than now, and played a great part in the development of the country through which they were laid out. Since the growth of railways many canals have become of less consequence, and some have been abandoned. Such canals as the Wabash, the Chesapeake and Ohio, and some others are falling into disuse, while the Champlain and the Erie are maintained and improved not so much because of the traffic between the cities and towns they pass through, as because they form connecting links between other great water-routes.

In countries where railways are less numerous than in America, the canal systems are more extensive and intricate, and are more generally used for the transport of miscellaneous goods. This is the case in France, the Lowlands, and Russia. In the United States the characteristic feature of canal traffic is slow freight, in few items of great bulk, carried long distances.

(d) **Coast Trade.** — Three-fourths of the tonnage of the American merchant marine are employed in our coastwise trade. Lines of steamers connect the great cities of the coast with one another. Such lines in particular carry passengers and freight between New York City and the ports of Galveston, New Orleans, Charleston, Richmond, Boston, and Portland.

Most of the coastwise freight, however, is transported in sailing-vessels. Coal going to New England from Philadelphia and New York Harbor, and pine lumber going north from the Gulf and lower Atlantic ports, are leading items in this traffic. Cotton, however, comes to the northeastern markets from Galveston, New Orleans, Savannah, and Charleston by steamer.

The principal staples in the coasting trade of the Pacific States are: canned salmon, seal-pelts, gold, and whalebone from Alaska; grain, lumber, and wool from Portland; coal from Seattle; and canned salmon from Astoria — all of these going mainly to San Francisco. Many cargoes of lumber are shipped from the same point to the ports of Los Angeles and San Diego in the south.

(e) **Railways.** — A network of railways is spread over the populous eastern half of our country, and great trans-continental lines connect the eastern roads with those of the Pacific States.

These trans-continental, or *Pacific railways*, are four in number:

1. **The Northern Pacific Railway** extends from St. Paul and Minneapolis, and from Duluth at the head of Lake Superior, to Portland, Oregon, and to Puget Sound.

2. **The Great Northern Railway** extends from Duluth and from St. Paul and Minneapolis to Seattle and Tacoma on Puget Sound.

3. The Main Line of the **Southern Pacific** System extends from New Orleans, Louisiana, to San Francisco: the **Central Pacific** division extends from Ogden, Utah, to San Francisco. This division connects at Ogden with the **Union Pacific**, running to Omaha and Kansas City, the chief commercial gateways of the Missouri River.

4. **The Atchison System** extends from Chicago and St. Louis to the Pacific coast, passing through the Southwest and reaching, by means of dependent lines, all the important points in the state of Texas.

The principal *Eastern Railways* are four in number:

1. **The New York Central and Hudson River Railroad** connects New York City with Albany, following the Hudson River, and extends through the Mohawk Valley west to Buffalo. Thence *via* the *Lake Shore and Michigan Southern* it extends to Cleveland, Toledo, and Chicago. It also connects at Buffalo with the *Michigan Central*, running to Detroit and Chicago. These lines are known as the "Vanderbilt system."

2. **The Pennsylvania Railroad.** — This system connects Philadelphia with Chicago, Cincinnati, and St. Louis by way of Pittsburg, and all these cities with New York.

3. **The New York, Lake Erie, and Western Railway.** — This system traverses the southern part of the state of New York, connecting the city of New York with Buffalo, and having a branch to Cincinnati called the *New York, Pennsylvania, and Ohio.*

4. **The Baltimore and Ohio Railroad.** — This system connects Baltimore (*a*) with Chicago, (*b*) with Cincinnati and St. Louis, and (*c*) with New York. The division to Cincinnati is called the *Cincinnati, Washington, and Baltimore,* and that between Cincinnati and St. Louis, the *Baltimore and Ohio Southwestern.*

Other important railways are the **Delaware, Lackawanna, and Western**; **Lehigh Valley**; the **Reading**; the **Richmond and Danville,** which connects Washington with New Orleans by way of Richmond, Atlanta, and Mobile; the **Virginia, Tennessee, and Georgia,** which connects Washington with Memphis by way of Knoxville and Chattanooga; the **Chicago and Alton,** which connects Chicago and St. Louis with Kansas City; the **Mobile and Ohio,** which connects St. Louis with Mobile and New Orleans; the **Chicago, Rock Island, and Pacific Railway,** which extends from Chicago to Omaha, Kansas City, Denver, and the Southwest; the **Chicago, Burlington, and Quincy**; the **Chicago, Milwaukee, and St. Paul Railway,** which connect the cities embraced in their name with the wheat-fields of the Northwest; and the **Chicago and Northwestern Railway,** which has terminals in Chicago, Milwaukee, St. Paul, Minneapolis, Omaha, and Sioux City, and lines extending into the Dakotas and through Nebraska to the Black Hills.

Railroad or Standard Time. — By an agreement of the American railway companies the country was divided (November, 1883) into four time-sections of fifteen degrees of longitude each. The 75th meridian of longitude west from Greenwich is the meridian of Eastern Time; the 90th meridian, that of Central Time; the 105th meridian, that of Mountain Time; and the 120th meridian, that of Pacific Time. (See *Map,* page 59.)

The lines separating the sections of Standard Time from one another would, if exact, be the meridians midway between each pair of Standard Time meridians; but such lines could not be adopted for the actual management of railroads. Accordingly the lines of separation are so arranged as to meet the needs of the various railways, and the result is the irregular areas of the sections of Standard Time as shown on the map.

It is mainly for purposes of travel and trade that we have need of accurate time, and the adoption of a uniform standard by the railroads has led to the abandonment of local (mean solar) time in nearly all the cities of the United States.

8. EXPORTS, IMPORTS, AND REVENUES.

— The United States ranks fourth among nations in the value of its foreign commerce, Great Britain being first, Germany second, and France third.

The value of the **exports** of our country for the decade 1880–1890 was $800,000,000 a year. Most of our sales are to Great Britain and her possessions, Germany, France, Belgium, the Netherlands, Spain and her colonies, Italy, and Mexico — named in the order of value.

The value of our **imports** in the same period was $740,000,000 a year. Most of our purchases are from Great Britain, Germany, France, Spain, Brazil, Japan, Italy, Mexico, China, Switzerland, the Netherlands, the Hawaiian Islands, Venezuela, Belgium, and Austria-Hungary — named in the order of value.

The **revenues** of the United States (that is, the money needed to support the government) in the year 1890 amounted to $400,000,000. Of this amount, $230,000,000 were derived from taxes on imports, and $170,000,000 from internal taxation and the sale of public lands.

II. THE STATES BY SECTIONS

THE surface and drainage of our country divide the states into three natural groups: (1) those of the Atlantic Highland and Plain, (2) those of the Central Plain, and (3) those of the Western Highland and Pacific Slope.

Because of differences of climate and products, and for reasons of convenience, we shall consider the states of the Central Plain as divided into two sections, Northern and Southern, and shall accordingly treat of the states of the Union in four groups:

1. The Atlantic States
2. The North Central States
3. The South Central States
4. The Western States.

I. THE ATLANTIC STATES

This group comprises the fourteen states that border upon the Atlantic Ocean, extending from Maine to Florida, and including the three states of Vermont, Pennsylvania, and West Virginia, which lie in the same geographical area.

The region of the Atlantic States is that part of our country which was first colonized by Europeans, and thirteen of these states were once the "United Colonies" that revolted against British rule. At the close of the Revolution, and for years thereafter, it was natural to speak of these seaboard states as New England, Middle, and Southern. And although more than half of the present population, and more than four-fifths of the area of the United States, are west of this section, it is still common to refer to the small northeastern group of New England as the "Eastern States," and to call by the name of "Middle States" the group that lies between New England and Virginia. It is likely, however, that such faults of nomenclature will soon disappear.

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1. MAINE, the northeastern state of the Union, has a population somewhat less than that of Connecticut, and an area five times as large. The contrast is explained by the facts that Connecticut is well peopled in all her counties, while the principal cities and towns of Maine are situated on the rivers and harbors of the coast region.

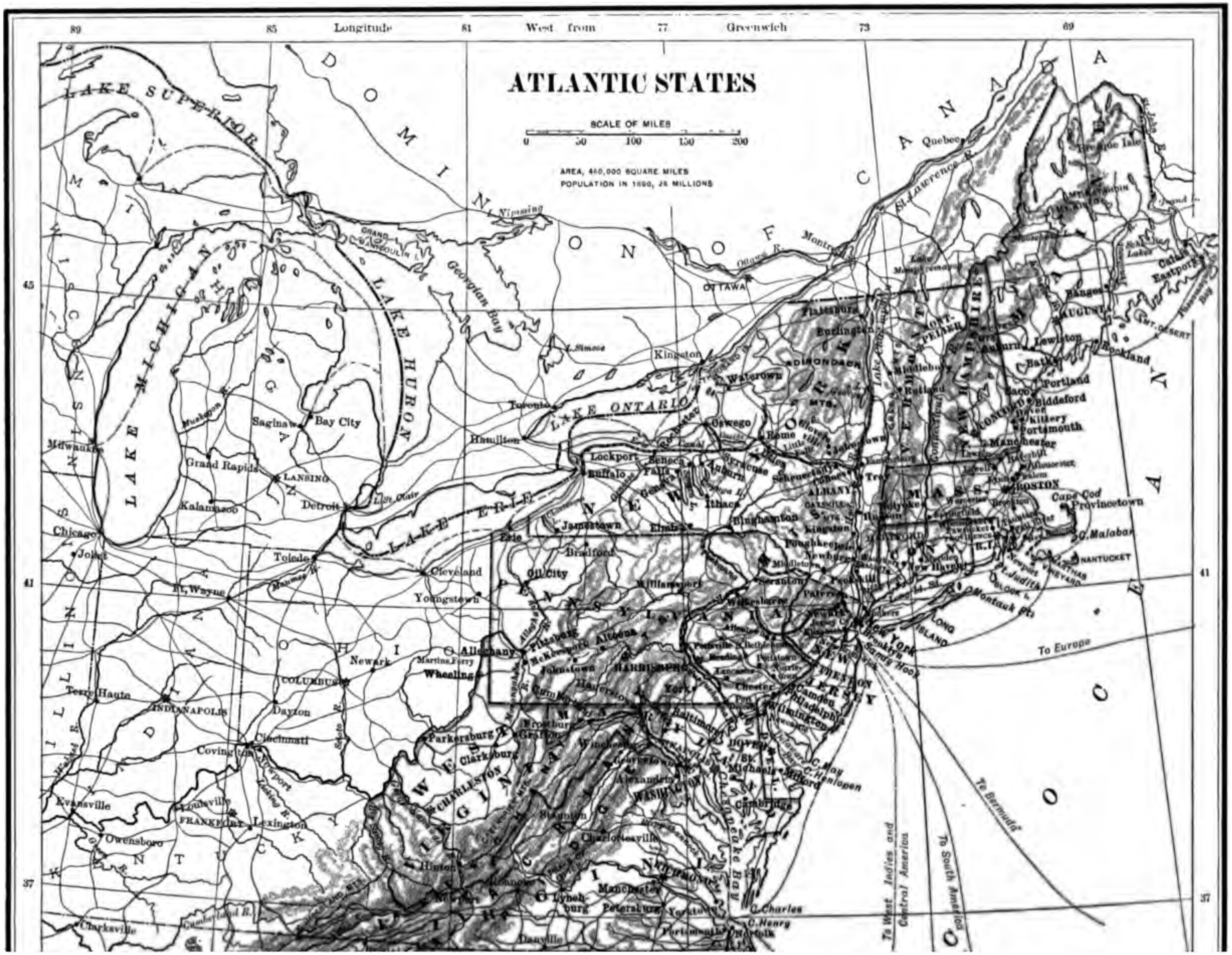
The thinly inhabited northern half of Maine is for the most part covered with pine forests. Felled timber is floated down the numerous rivers to the saw-mills and shipyards at or near their mouths. The Grand Banks east of Nova Scotia are easily reached from the fishing-ports of the Maine coast. This state ranks first in wooden shipbuilding, and second to Massachusetts alone in the sea-fisheries.

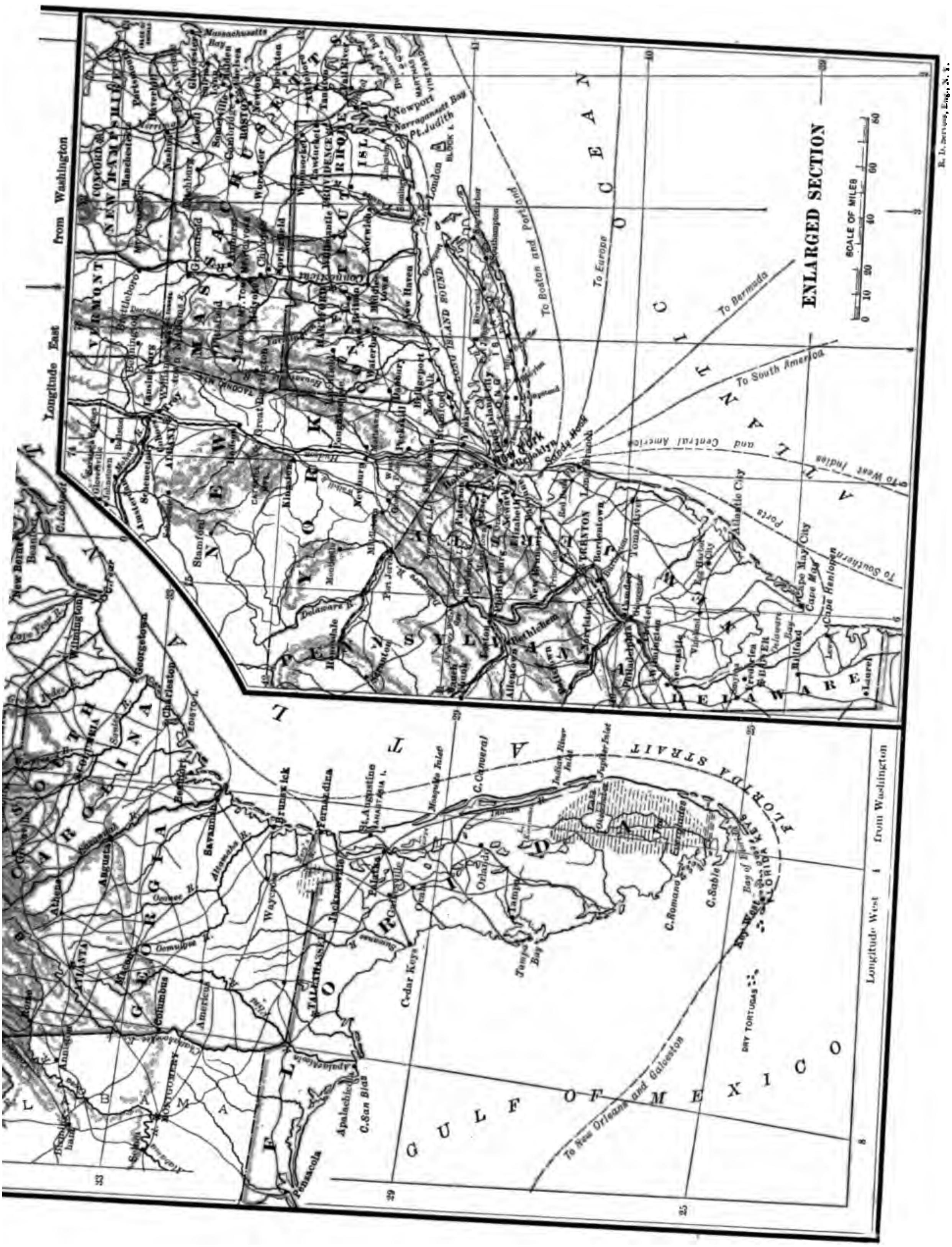
During the winter the towns on the Penobscot and Kennebec rivers do a great deal of ice-cutting for the New York and other markets. In the same season, the St. Lawrence being frozen, much of the commerce of Canada is carried on over the Grand Trunk Railway, which, as we have seen, has Portland for its eastern terminus.

The towns of the seaboard have railway communication with Boston, and thence with the West and South. The wooden ships for which this state is famous are very active in the coasting trade of all the Atlantic States.

In general the soil is not very fertile. In the coast region and on the western border granite is quarried. Roofing-slate of the finest quality is found in the central part. The manufacture of textiles, lumbering, shipbuilding, and the fisheries are the great industries of the Pine-Tree State.

Portland is the largest city and the chief seaport. A fine fleet goes out from this harbor to the cod and mackerel fisheries. **Bangor,** at the head of tide-water on the Penobscot, is one of the greatest lumber markets in the world. Spruce and hemlock are the main items in this trade.


ATLANTIC STATES
SCALE OF MILES
0
50
100
150
200
AREA, 460,000 SQUARE MILES
POPULATION IN 1890, 26 MILLIONS
Longitude
West from
Greenwich
89
85
81
77
73
69
45
41
37
DOMINION OF CANADA
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
Georgian Bay
Nipissing
L. Simcoe
OTTAWA
Montreal
Quebec
St. Lawrence R.
Kingston
Toronto
Hamilton
MICHIGAN
Saginaw
Bay City
Grand Rapids
LANSING
Kalamazoo
Detroit
WISCONSIN
Milwaukee
ILLINOIS
Chicago
Joliet
Terre Haute
INDIANA
INDIANAPOLIS
Ft. Wayne
Evansville
KENTUCKY
Louisville
FRANKFORT
Lexington
Owensboro
Covington
Newport
Clarksville
OHIO
Toledo
Cleveland
Youngstown
Newark
COLUMBUS
Dayton
Cincinnati
Wheeling
Martins Ferry
Allegheny
PENNSYLVANIA
Erie
Jamestown
Bradford
Oil City
Williamsport
Pittsburg
McKeesport
Altoona
Johnstown
HARRISBURG
York
Scranton
Chester
NEW YORK
Lockport
Buffalo
Oswego
Watertown
Rome
Syracuse
Auburn
Ithaca
Elmira
Binghamton
Schenectady
ALBANY
Troy
Kingston
Poughkeepsie
Newburgh
Paterson
Newark
Brooklyn
Sandy Hook
LONG ISLAND
Montauk Pt.
NEW JERSEY
TRENTON
Camden
Philadelphia
Wilmington
DOVER
C. May
C. Henlopen
Cambridge
MARYLAND
Baltimore
Frostburg
WASHINGTON
Alexandria
WEST VIRGINIA
Parkersburg
Grafton
Clarksburg
CHARLESTON
VIRGINIA
Winchester
Staunton
Charlottesville
Lynchburg
Petersburg
Manchester
RICHMOND
Yorktown
Portsmouth
Norfolk
Danville
C. Charles
C. Henry
Chesapeake Bay
VERMONT
Burlington
Plattsburg
Middlebury
Rutland
MONTPELIER
Lake Champlain
ADIRONDACK MTS.
NEW HAMPSHIRE
CONCORD
Manchester
Portsmouth
Dover
MASSACHUSETTS
BOSTON
Lowell
Cape Cod
Provincetown
C. Malabar
NANTUCKET
MARTHAS VINEYARD
R.I.
Newport
Block I.
Pt. Judith
CONN.
HARTFORD
New Haven
MAINE
AUGUSTA
Bangor
Lewiston
Auburn
Bath
Portland
Biddeford
Saco
Kittery
Rockland
MT. DESERT
Calais
Eastport
Presque Isle
MT. KATAHDIN
St. John R.
ATLANTIC OCEAN
To Europe
To Bermuda
To South America
To West Indies and Central America



R. D. Servoss, Eng., N. Y.

Eastport, and the towns adjoining it, do nearly all the sardine catching and canning of the United States. This is the most easterly town of the Union. More wooden vessels are built in the shipyards of **Bath**, near the mouth of the Kennebec, than in any other Atlantic port. **Calais** and **Rockland** are other shipbuilding ports. There are great cotton and woolen mills at **Auburn** and **Lewiston** on the Androscoggin, and at **Biddeford** and **Saco** on opposite banks of the Saco River — all four cities being situated in the southwest. **Augusta**, the capital, on fine water-powers of the Kennebec River, manufactures cotton-goods and lumber.

2. NEW HAMPSHIRE is about equal in area to Vermont, and in population to Rhode Island. The northern half is sparsely peopled; in the southeast are many manufacturing towns and cities. A considerable portion of the factory population is Canadian French. The chief industries of New Hampshire are the manufacturing of cotton and woolen goods, and boots and shoes. The annual value of all agricultural products is

Lumbering-Camp in Maine

only about one-fifth that of the manufactures. The state has quarries of excellent granite.

Manchester ranks fourth among American cities in the manufacture of cotton goods. A great part of the prosperity of this city is owing to the Blodgett Canal, which brings the waters of the Merrimac River to its mills. Silk goods, locomotive engines, steam fire-engines, and a great variety of machines are also made in Manchester.

Nashua has cotton and woolen mills, besides paper, carpet, and tool factories. **Dover** manufactures cottons, woolens, boots and shoes, brass-ware, and carriages. **Concord**, the capital, is well known for its coach and wagon factories. At **Portsmouth**, the only seaport, are cotton mills, boot and shoe factories, and shipyards. On the opposite bank of the Piscataqua River, at Kittery in Maine, is a United States navy yard, generally spoken of as the "Portsmouth" navy yard.

3. VERMONT is about equal to New Hampshire in both area and population. Stock-raising and dairy-farming are the principal occupations. Horses and sheep are exported in great numbers. The mineral wealth of Vermont consists of its beds of building and ornamental stone. In no other state of the Union is so great a quantity and variety of marble produced. Granite, roofing-slate, and soapstone are also quarried.

Vermont has water communication with the Hudson valley by way of the Champlain Canal, and with the St. Lawrence valley through the outlet of Lake Champlain, while the railway facilities in all directions are excellent.

Burlington, on Lake Champlain, is the largest city, and ranks third in importance among the lumber markets of the Union. This port has a busy trade with Canada. **Rutland** and **Middlebury** are the chief sources of supply for white and variegated marbles. **Montpelier** is the capital.

4. MASSACHUSETTS has an area somewhat smaller than that of Vermont, and a population about equal to that of the five other New England States taken together. It is the leading state of the Union in the fisheries, and ranks third in manufactures. Most of the factory towns are within fifty miles of Boston. The products of greatest value are cotton goods, boots and shoes, and paper. Into this, as into the other New England States, many French Canadians have come in recent years to work in the factories, and have with their savings bought homes and settled permanently.

The soil of the state is generally not very fertile. Some tobacco is raised in the Connecticut valley; almost all the cereals are cultivated; and market-gardening is actively followed in the vicinity of the large cities.

There are more than 3000 miles of railroad in Massachusetts. The Hoosac Tunnel, nearly six miles in length, pierces the mountain of the same name in the northwestern part of the state. The road which passes through this tunnel, and the older Boston-and-Albany road, give direct communication with the West and South.

Boston, the capital, is the center of New England industry and commerce. Its railway connections, together with its coastwise and ocean traffic, make this city the second seaport of the United States. Food products are received from the West by way of the New York Central Railway with its Massachusetts connections. Boston Harbor is one of the best in the country. Sugar-refining, printing and publishing, and the manufacture of shoes, clothing, and iron goods are leading industries. Boston is the first leather market and the second wool market of the United States. **Cambridge**, **Chelsea**, **Malden**, **Newton**, and **Somerville**

are growing suburban cities, whose varied industries are tributary to the Boston market.

Worcester, second in population among the cities of Massachusetts, is celebrated for its varied manufactures of iron and steel. Heavy machinery and iron castings are produced in great quantity. Here is the largest wire-making establishment in the world. **Fall River** is the greatest cotton-manufacturing city in America. It has also woolen mills and iron foundries of large output. The harbor is good, and busy coasters bring in cotton and coal, and take out factory products. Fall River is a terminus of the most important steamboat traffic between New York and Boston. **Lowell**, at Pawtucket Falls, on the Merrimac, ranks third to Fall River among the cotton-mill centers of the United States. Here also are woolen mills, machine shops, and carpet factories. **Lynn** produces more boots and shoes than any other city in the world. The manufacture of electrical appliances is a great and growing industry. **Brockton** and **Haverhill** are other towns that have great shoe factories.

Holyoke Paper Mills. — Machine Room

The growth of the boot and shoe industry in eastern Massachusetts, as one result of which Boston is a great buyer of hides and leather, has been due to the mechanical inventions of Blake, Mackay, and other Americans. In addition to their application of the sewing-machine to shoemaking, there are machines for cutting leather, stamping out soles and heels, and for lasting, trimming, burnishing, and eyeleting. It is possible to cut shoes from the leather, and carry them through the successive stages of manufacture so as to fit them for wear, all in the space of one hour. The human hand does little but guide the material from machine to machine.

Holyoke Paper Mills. — Sorting Paper Stock

Gloucester, on Cape Ann, is the most important of American fishing-ports. Near this place are extensive granite quarries. **Provincetown**, on Cape Cod, also sends out a large fleet to the fisheries. It is, next to **New Bedford**, the greatest sperm-whaling port in the world. The last-named place ranks second among the cotton-mill towns of the United States. In New Bedford are the Wamsutta Mills, one of the largest cotton-manufacturing establishments in the world.

At **Taunton**, on the river of the same name, are plated-ware factories, and iron and steel works. Many large coasting schooners sail from this port. At **Lawrence**, on the Merrimac, are great cotton and woolen mills; at **Holyoke**, on the Connecticut, similar industries, besides paper mills that produce half the paper used in the United States; at **Springfield**, on the same river, firearms and paper and envelopes are made; at **Waltham** is a famous watch factory;

at **Attleboro** are extensive jewelry-making establishments; and at **Salem**, leather and cotton goods are manufactured. Salem has a busy coasting fleet engaged in taking out ice and bringing back coal. **Fitchburg**, about twenty-five miles north of Worcester, manufactures chairs, paper, and machinery.

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5. RHODE ISLAND, the smallest state of the Union, is about one-fourth as large as Connecticut. The population of Rhode Island is about half that of Connecticut, and is therefore twice as dense. The state is remarkable for its manufactures of cotton, woolen, and rubber goods, hardware, and jewelry. The cotton mills, in particular, have given to Rhode Island a large factory population ever since Slater set up here, late in the last century, the English cotton machinery. The Blackstone and other rivers that flow into Narragansett Bay are lined with factory towns.

Rhode Island has direct railway communication with New York and Boston, and daily steamboat connection with the former city by way of Long Island Sound. The commerce that passes through this approach to New York surpasses in value all the other coastwise trade of the Atlantic States.

Providence and **Newport** are both capitals. Providence, the largest city, is famous for its manufactures of jewelry, and for its great iron foundries. Favorably situated in the great textile-manufacturing region, this city has a considerable coast trade in cotton and wool and their products. Cloth-bleaching and calico-printing are the chief industries of **Pawtucket**. At **Woonsocket** are the greatest woolen mills in America, and the most extensive rubber-shoe factory in the world.

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6. CONNECTICUT, as we have seen, is four times as large, and has twice as many inhabitants, as Rhode Island. The soil is not very fertile except in the river valleys. Tobacco of good quality is cultivated, chiefly in the valley of the Connecticut. In other parts of the state cattle-raising and dairy-farming are the principal agricultural industries.

The Connecticut River is navigable to Hartford, and the Thames River to Norwich. Both of these cities, as well as the ports of Stonington, New London, New Haven, and Bridgeport, have daily steamboat communication with New York. The ports named maintain a busy coasting trade. The oyster-beds of the shore waters of Long Island Sound are very valuable. Connecticut is traversed by many railways, of which the three lines between Boston and New York are the most important.

Iron ores and marble are worked in the northwest; and brown sandstone, granite, and slate are quarried in the central part. But it is for the amount and diversity of its manufactures that this state is industrially famous. Metal-working, especially in brass goods, cutlery, and plated-ware, is the most important and characteristic industry. Cotton, woolen, and silk mills dot the banks of the numerous rapid streams. In the manufacture of rubber goods and hardware, Connecticut is the leading state.

Hartford, the capital, has for its chief industries the manufacture of firearms, bicycles, edge-tools, and envelopes. **New Haven**, the largest city, contains 800 manufacturing establishments. The principal products of these are carriages, hardware, wire, and the Winchester repeating firearms. This city is the chief market for the oysters of Long Island Sound. Coal and iron for the factories of New Haven and vicinity are the principal receipts of the coasting trade at this point. **Bridgeport**, the third city in population, manufactures sewing-machines, carriages, hardware, and firearms. A good many fishing-schooners sail from this port.

Waterbury produces three-fifths of all the brass goods made in the United States, consuming every year 3000 tons of crude copper. The greatest items of the output are sheet-brass and sheet-copper, copper wire and brass tubing. Here also is a great watch factory. The population of Waterbury is largely of foreign birth. **Norwich** is situated at the point where the Yantic and Shetucket rivers unite to form the Thames. These streams afford fine water-powers for numerous cotton, woolen, and paper mills. **Willimantic** has the largest cotton-thread works in the country. At **Meriden**, cutlery, lamps and gas fixtures, and Britannia-ware, silverware, tinware, and plated-ware are made. The leading factory products of **New Britain** are bronze goods, cutlery, tools, and jewelry. At **Middletown** electrical appliances, plated-ware, cotton and silk goods, and wares of cast iron and galvanized iron are made. **Danbury** is famous for its manufacture of hats.

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7. NEW YORK, the "Empire State," leads in commerce and in manufactures, as it does in population. In area it is about equal to Maine, New Hampshire, and Vermont, and its population is 6,000,000; that is, nearly one-tenth of the total population of the United States.

This great state possesses extraordinary advantages for its commerce and its varied industries. On the north and west New York borders on two of the Great Lakes and the St. Lawrence River; on the east there is continuous water communication, by way of Lake Champlain and the Hudson River, between the St. Lawrence system and the splendid harbor of New York. The Appalachian Mountain system is intersected, about the middle of the state, by the natural depression of the Mohawk valley, and, as we have seen, the Erie Canal, which follows this valley, connects the waters of the Hudson with those of the Great Lakes. There are eleven other canals in the state, most of them little used. The New York Central Railroad has a route that is in general in the same direction as that of the Erie Canal. Many other railways traverse the state. Owing to its magnificent seaport and its admirable land and water communications, New York enjoys a large proportion of the national trade, domestic and foreign.

The many rivers and streams afford abundant water-powers, and the western half of New York contains large areas of very fertile land. The farm products include all the northern cereals, besides hay, hops, and tobacco. Dairy-farming, however, is the greatest agricultural interest, and this state ranks first in the value of dairy products. The mountainous parts of New York are covered with forests, chiefly of hardwood trees. Iron is mined in the eastern and northeastern counties, the quantity produced being surpassed by Michigan and Pennsylvania only.

Granite, slate, and marble are quarried in the northeast, and sandstone and limestone in many localities. Salt has long been produced in great quantities from the wells at Syracuse. The most important items of manufacture are: clothing, iron and steel goods, refined sugar, leather products, malt liquors, and animal products.

New York City, the metropolis of the Western Hemisphere, is largest in wealth, commerce, and industries, as well as in population. With its immediate environs it forms a center which is exceeded in population by only one city in the world — London. The harbor of New York furnishes 100 square miles of anchorage ground. Manhattan Island has 25 miles of water front, while adjacent shores supply as much more.

Two-fifths of the exports, and more than half of the imports, of the United States pass through this port, which includes, for customs purposes, all the shores that front upon the waters of the harbor. Twenty-nine regular lines of steamships run between New York and European ports;

there are other lines to the West Indies, Central America, and South America; besides a dozen lines to domestic ports. Four hundred tug-boats are helpers in the traffic of this great harbor.

There are three principal approaches by water, — one by Long Island Sound, through the East River; one by the Hudson River, here called North River; and one by New York Bay. Only one trunk line of railway, the New York Central and Hudson River, enters the metropolis directly. The Erie, the Pennsylvania, and the Baltimore and Ohio, have their termini on the Jersey shore, opposite the city. They practically end in New York, for freight cars are transported across the river by ferry to that city.

The manufacturing industries of New York City are of the greatest number and variety. Some of the larger items are: products of iron and leather, malt liquors, clothing, cigars and cigarettes, and printing and publishing.

View looking up South Street, New York

Brooklyn, the second city of the state, is connected with New York by a great suspension bridge. The industries are as varied as those of her sister city. The shipyards and vast sugar refineries deserve especial mention. **Long Island City**, which adjoins Brooklyn on the north, and which fronts on the East River directly opposite New York City, has great oil refineries. These are connected by pipe line with the Pennsylvania petroleum fields. **Yonkers**, a city immediately to the north of New York, is famous for its carpets and woolens, and has, besides, manufactures of hats, silk goods, and brassware.

Buffalo, the third city of the state, is an important railway center, situated at the junction of the Erie Canal with the waters of Lake Erie. It receives grain, lumber, and ores from the lake shipping for the Eastern market, and takes in exchange, from canal and railways, the coal and manufactured goods that are sent from the East to the lake ports. Here are great elevators which transfer grain from the lake-vessels to cars and canal-boats. The principal local industries are wood-working, and the manufacture of glucose, brassware, copper, and sheet-iron.

Albany, the capital, is situated near the point where the Erie and Champlain canals meet the waters of Hudson River. It is an important railway center for the western travel and trade of both Boston and New York City. It is a great timber market, and has extensive tanneries, breweries, and iron foundries.

Not far from Albany, and sharing the same facilities for commerce by land and water, are: **Troy**, which is celebrated for its engineering works and its great shirt, collar, and cuff factories; **Cohoes**, which manufactures all sorts of knit-goods, and one-third of American hosiery; **Lansingburg**, famous for its brushes and its oilcloths; and **Schenectady**, which manufactures locomotives, iron bridges, machinery, electrical appliances, shawls, and varnish.

Among *Hudson River towns* are: **Hudson**, where pianos, paper, car-wheels, and steam fire-engines are made; **Kingston**, which is a great shipping center for bricks, lime, and bluestone, and which produces more cement than any other place in the country; **Poughkeepsie**, which has great iron furnaces, glass-works, and potteries; **Newburg**, where lawn-mowers, bricks, cement, and paper are made, and which has a busy river trade in coal and lumber; and **Peekskill**, which has manufactures of fire-brick and stoves.

Lockport takes its name from the great locks of the Erie Canal at this point. Here are great mills for the manufacture of cottons, woolens, flour, and lumber. Other cities and *towns on the line of the New York Central Railroad and the Erie Canal* are: **Rochester**, which is located at the upper falls of the Genesee River, which has great flour mills, shoe factories, carriage shops, and iron foundries, and in the vicinity of which are the most extensive nurseries of fruit and ornamental trees in the United States; **Syracuse**, where great quantities of clothing, glassware, and agricultural implements are manufactured, and whose famous salt-wells yield 7,000,000 bushels of salt every year; **Rome**, which has extensive locomotive works, railroad shops, brass and rolling mills, and lumber yards; **Utica**, where shoes and knit-goods are largely made, and which is an important center of hop culture and trade; **Little Falls**, center of the cheese market, which has also starch factories, and paper, cotton, and woolen mills; and **Amsterdam**, famous for its brooms, knit-goods, and hosiery.

At **Johnstown** and **Gloversville**, adjoining places in Fulton County, are made two-thirds of the leather gloves and mittens used in the United States. **Watertown**, on the rapids of the Black River, has cotton, woolen, and paper mills, and machine shops. **Oswego** is the only important city of the state that is situated on Lake Ontario. Here are flour mills, iron works and the largest starch factory in the world. Oswego has considerable lake trade with Canada. **Plattsburg**, on Lake Champlain, has extensive iron works and saw-mills, besides nail factories, wagon shops, and sewing-machine establishments. At **Auburn**, in Cayuga County, cotton and woolen fabrics, carpets, paper, and farm-implements are made. In the vicinity of **Geneva**, on Seneca Lake, are extensive nurseries of fruit-trees and ornamental trees and shrubs that cover an area of 10,000 acres. Of **Seneca Falls**, situated at the outlet of the same lake, steam fire-engines, pumps, and knit-goods are the leading products. At **Ithaca**, near Cayuga Lake, paper, glass, and agricultural implements are made. **Jamestown**, near the outlet of Chautauqua Lake, has manufactures of woolen goods, pianos, furniture, and edge tools. At **Elmira**, in Chemung County, are tanneries, shoe factories, iron works, and piano factories. **Binghamton**, in Broome County, manufactures boots and shoes, and great quantities of cigars.

8. NEW JERSEY is somewhat smaller than Massachusetts, and has a population about equal to that of New York City. The northern half of the state is hilly, and in some places mountainous; the southern part is lower and comparatively level. Nearly all the boundaries of New Jersey are water boundaries. On the west and south are Delaware Bay, on the east is the Atlantic, and on the northeast are Newark Bay and New York Bay. The coasting trade is, in consequence, very active. On the shores and in the estuaries of the southern part are extensive oyster-beds. Iron and zinc are mined in the northwest; there are beds of potter's clay near Trenton and elsewhere; and a fine quality of brownstone is quarried at several points.

The northern half of the state is thickly populated, and the more fertile areas of land are devoted to market-gardening for the cities of New York and Philadelphia. The valley of the Delaware is a fine agricultural region.

The numerous railways do a great business in transporting coal from the Pennsylvania mines to the Eastern market. The Morris Canal connects Phillipsburg on the Delaware with Jersey City, and the Raritan Canal extends from Bordentown on the Delaware to New Brunswick at the head of navigation on Raritan River.

New Jersey is the leading state of the Union in the production of pottery, silk goods, glassware, and zinc. Linen, cotton, rubber, and leather goods are valuable items of manufacture.

Newark, on the Passaic River, is the largest and oldest city in the state. It supports a considerable coastwise trade, and much of the coal of the Lehigh valley comes here by way of the Morris Canal. The manufactures of this city are of great total value and considerable variety. Leading items are: the tanning of leather and the manufacture of trunks, saddlery, and shoes; rubber goods, hats, and clothing; cottons, woolens, silk thread, and sewing-machines; jewelry, chemicals, and cigars and tobacco.

Trenton, the capital, is situated at the head of steam navigation on the Delaware River. It has great iron and steel works, zinc works, and potteries. More crockery is made here than anywhere else in America. Rubber goods and matches are other important products of local industry.

Jersey City, on the harbor of New York, is the terminus of the Morris Canal and of many railway and steamship lines. This city is a great coal and iron depot, and has extensive sugar refineries, abattoirs, tobacco factories, breweries, glass works, machine and repair shops, and lead-pencil and watch factories. **Hoboken,** adjoining Jersey City on the north, has large iron foundries, and a great coal trade; while **Bayonne,** on the south, is an important depot for coal and petroleum.

Paterson is situated at the great falls of the Passaic River, and on the line of the Morris Canal. This city ranks second to Newark in the value of its manufactures. It is the center of the silk industry of the United States, and is for this reason sometimes referred to as "the Lyons of America." Cotton and linen thread are manufactured on an extensive scale, 6000 operatives being employed in the making of spool-cotton alone. Flax, hemp, and jute goods; paper and chemicals; fire-engines, locomotives, and sewing-machines are also made at this place.

Elizabeth, near the mouth of the river of the same name, is the port for great coastwise shipments of coal. Machinery, hardware, tools, and sewing-machines; pottery, oilcloth, and hats, are the chief local products. **New Brunswick,** at the head of navigation on the Raritan River, is the eastern terminus of the Raritan Canal. Harness, shoes, rubber goods, and hosiery are made here. **Camden,** on the Delaware, opposite Philadelphia, is an important railway terminus.

Saw-mills, iron foundries, shipyards, chemical factories, and glass works, give employment to the industrial population.

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9. PENNSYLVANIA is in both area and population about nine-tenths as large as the state of New York. It is the first state in the Union in the production of coal, iron, and petroleum, and in the manufacture of iron and steel. It is exceeded by New York alone in the total value of its manufactures.

Anthracite coal is mined in the eastern part of the state. That of the Lehigh valley goes mainly to New York for the Eastern market; that of the Schuylkill valley is sent east and west over the Reading Railroad; that of the valley of the Susquehanna (East Branch) goes chiefly to Chicago, Boston, and the St. Lawrence valley.

Bituminous coal is mined in the western third of the state, the richest deposits lying in the southwestern counties.

Iron ores are widely distributed. Those of the eastern part of the state are largely transported by rail to the bituminous coal region to be smelted. Iron ores from Michigan, Lake Champlain, and northern New Jersey, where suitable fuel for smelting is lacking, are also sent to the blast furnaces of western Pennsylvania.

The petroleum fields of this state have already been described. Their annual outflow is 30,000,000 gallons.

Several of the older canals of Pennsylvania have been abandoned. The most important one still in use follows the valley of the Susquehanna. Railroads traverse the state in all directions, but the Pennsylvania, the Lehigh Valley, and the Reading, with their branches, are the most important systems.

The valleys of the middle part of the state produce all the cereals of this latitude. Southeast of the Appalachian ranges is a triangular area, comprising eight counties, of fertile and highly cultivated land. This region is one great market-garden for Philadelphia and Baltimore. Lancaster County is one of the richest agricultural sections of the state. Tobacco is the leading crop of Pennsylvania, which is the third state in the Union in the value of this product.

Philadelphia is the largest city in the state, and the third city of the Union. The depth of the Delaware River at this point is sufficient to admit large steamships, and the city has a great foreign and coastwise trade. It ships more anthracite coal and more petroleum than any other port in the world. The growth and prosperity of Philadelphia, as of many other cities of this state, have mainly resulted from the nearness of rich deposits of coal and iron. In this, as in all large cities, the industries are of the greatest diversity. Products for which Philadelphia is especially famous are: carpets, woolen cloths and clothing, and worsteds, bricks, chemicals, and shoes. Tinware for the fruit-canneries of the Delaware valley, and the oyster-canneries of Baltimore, is made here; and Philadelphia, like the other important seaports of our Atlantic coast, does a great business in sugar-refining. **Chester,** ten miles lower down the Delaware River, has the largest shipyards in the United States. Here iron steamships of the best type are constructed for our merchant marine and for the United States navy.

The next largest center of population is in western Pennsylvania, at the point where the Alleghany and Monongahela rivers unite to form the Ohio. The sister cities of **Pittsburg** and **Allegheny** form a great railway center, at the head of Ohio navigation, in the heart of the coke counties, convenient to the petroleum fields, and surrounded by wells of natural gas. Here are received and distributed immense supplies of dairy and pork products and grain, and from this point vast quantities of coal and coke are shipped down the Ohio River.

Pittsburg manufactures more iron, steel, and glass than any other city in the country. It has extensive oil-refineries and breweries, besides manufactories of copper, leather, and tobacco. At **Allegheny** are extensive foundries, rolling-mills, and locomotive and machine shops. Cotton goods and leather are also manufactured. **McKeesport**, about ten miles southeast of Pittsburg, is a town of iron and steel works.

Harrisburg, the capital, is situated on the Susquehanna, at the junction of the Reading and Pennsylvania railroads. It is an important center in the transportation of coal and iron. Iron-working of great variety and amount is carried on at this point. Potteries, tanneries, and lumber-mills are among the busiest industrial establishments. **Oil City**, as its name indicates, is situated in the heart of the petroleum fields. **Erie**, about fifty miles north of Oil City, is the only lake port of Pennsylvania. Much petroleum is refined at this place, and there is considerable lake trade in the staple mineral products of the state — coal, iron, and oil. **Williamsport**, on the West Branch of the Susquehanna, has many saw-mills and planing-mills, and is an important lumber market.

Steel Mills, Pittsburg

In the Lehigh valley: **Mauch Chunk**, by reason of its canal and railroad facilities, is a center of the anthracite trade; **Allentown** is a depot for iron ores and coal, and has extensive blast furnaces, rolling-mills, iron works, and silk-mills; **Bethlehem** has great iron works, and also manufactures silk; and **Easton** has iron and steel works. It has also fine railway and canal connections, east and west.

In the Schuylkill valley: **Pottsville** handles iron ores and anthracite, and manufactures bridges and machinery, carpets and shoes; **Reading**, a canal and railroad center, has tanneries and great iron and steel works; **Pottstown** is a town of blast furnaces, rolling-mills, and iron foundries; and **Norristown** has blast furnaces, and woolen and cotton mills.

On the East Branch of the Susquehanna: **Scranton** has very important iron and steel works; and **Wilkesbarre** manufactures locomotives, cars, and mining-engines.

At **Altoona** are the largest shops in the state for the building and repair of cars and locomotives. At **Johnstown** are tanneries and great iron works. At **Honesdale**, glassware, steam engines, and woolens are made. At **Lancaster** are potteries and blast furnaces. This city has a busy trade in tobacco and lumber. **York** manufactures cars, shoes, paper, and agricultural implements.

10. DELAWARE is, next to Rhode Island, the smallest state in the Union. It is little more than one-fourth as large as the neighboring state of New Jersey, and has a population about equal to that of Jersey City. Delaware occupies the northeastern part of the peninsula which lies between Chesapeake Bay and the Atlantic Ocean. This peninsula, which includes also nine counties of Maryland and two of Virginia, is a famous fruit-growing and market-gardening region. Peaches, berries, and vegetables are sent fresh to Philadelphia and New York, and the surplus of these crops is canned for more distant markets. Dried fruits, also, are prepared in the orchard counties.

The Baltimore and Ohio Railway crosses the northern part of the state, and local lines extend into Maryland. A short canal in the narrow, northeastern part of the state connects Chesapeake Bay with the Delaware River, providing cheap water transportation between Baltimore and Philadelphia. Near Cape Henlopen sea-walls half a mile in length have been constructed to provide storm-shelter for shipping. This artificial harbor is known as the Delaware Breakwater.

Wilmington, the largest city, is situated near the Delaware River, at the falls of Brandywine Creek. It has flour-mills of immense capacity, is well known for the manufacture of gunpowder, has great yards for the building of iron ships, and the passenger cars made here are familiar on most American railroads. There are also paper-mills, cotton-mills, and carriage factories at this place.

Dover, the capital, is situated in the heart of the state. It is the center of the fruit-drying and fruit-canning industries. **Frederika** and **Milford** are largely engaged in the same business. **Laurel**, in the southwestern part, manufactures great quantities of crates and baskets for the fruit trade. **Newcastle**, a few miles below Wilmington, has extensive rolling-mills and locomotive works.

11. MARYLAND is, in area, about half as large as West Virginia, which adjoins it on the west. The population numbers a million, more than one-third of the inhabitants living in the city of Baltimore. The narrow, western half of Maryland is crossed by the Appalachian ranges, and the much larger eastern portion of the state has a comparatively even surface. Maryland has a shore line of 400 miles on river, bay, and ocean.

The lands of the peninsula counties are mainly devoted to fruit culture and dairy-farming. Tobacco, wheat, corn, flax, and hops are raised in other sections of the state. Bituminous coal and iron ores are mined in Allegany County, in the western part. Cumberland is the depot for the trade in these minerals. Near Baltimore a fine quality of marble is quarried. The oyster beds of Chesapeake Bay are the most extensive and valuable in the world. There are more than 1000 miles of railway in the state. The Baltimore and Ohio, with its branches, is the principal system.

Baltimore, situated on an arm of Chesapeake Bay, is the largest city, and an important seaport. The imports are comparatively small, but this city ranks fourth among the seaports of the Union in the value of its export trade, being exceeded in this only by New York, New Orleans, and Boston. The great items of shipment are grain, petroleum, pork products, cotton, and tobacco. Sugar and petroleum are refined here in large quantities, and immense grain elevators transship the cereals brought by railway from the West. Near Baltimore are beds of the finest brick clay, from which about 100,000,000 bricks are annually made. The canning of Chesapeake oysters and of fruits and vegetables consumes 25,000,000 cans a year. Baltimore has great rolling-mills, and many shoe, clothing, and tobacco factories. **Annapolis** is the capital.

Port Deposit, at the head of tide-water on the Susquehanna, is a busy lumber market. At **Frederick** are leather factories, and paper and woolen mills. The small towns of **St. Michaels** and **Cambridge** are active in the oyster trade.

The federal **DISTRICT OF COLUMBIA**, once a part of Maryland, covers seventy square miles of territory, and has a population about equal to that of the city of Pittsburg. Within it are **Washington**, the capital of the United States, which is rather a political than a manufacturing or commercial city; and **Georgetown**, which has some coasting trade in the coal, tobacco, grain, and flour of Pennsylvania and Maryland.

12. VIRGINIA is somewhat smaller than Pennsylvania, and has a population one-third as great, or about as large as that of New York City. The western part is highland country, consisting of the Alleghany Mountains, the Blue Ridge, and the valley between them; the larger eastern part is a great plain gradually sloping to tide-water.

Agriculture is the leading occupation, and the principal crops are of wheat, corn, oats, and tobacco. In the value of the tobacco produced, Virginia is the second state of the Union.

The Blue Ridge abounds in ores of iron and copper throughout its whole length. Bituminous coal is mined in great quantities in the extreme southwest. Virginia shares in the oyster-fisheries of Chesapeake Bay and its inlets. The most important manufactures of the state are flour and tobacco products. These industries are carried on almost wholly in the southeastern part, on or near the James River.

There are about 2000 miles of railway in Virginia. The Richmond, Petersburg, and Potomac forms part of the much-traveled route between the cities of the Northeast and the winter resorts of Florida. The Chesapeake and Ohio from the west, and the Richmond and Danville from the southwest, are the principal trunk lines.

The numerous rivers and the Chesapeake waters of Virginia provide 1000 miles of navigable channels. Hampton Roads, 400 square miles in area, is the finest landlocked harbor on the Atlantic coast.

Richmond, the capital, is situated at the falls of the James River, and has steamship communication with New York and other ports. It is famous for its great flour-mills and tobacco factories, and has manufactories of machinery, cars, and agricultural implements.

Norfolk, on the Elizabeth River, near the mouth of the James, and also near the harbor of Hampton Roads, is the most important commercial city of the state. The harbor is excellent, and from it there is a great coasting trade in cotton, coal, lumber, and tobacco, as well as in canned fruits, oysters, and vegetables. **Portsmouth**, on the opposite bank of the Elizabeth River, forms part of the same busy trade center. **Yorktown**, on York River, is the principal shipping-point for Virginia tobacco. **Petersburg**, on the Appomattox, and **Manchester**, on the James, have tobacco factories, and paper and cotton mills. **Lynchburg**, on the James, has great tobacco factories, besides flour-mills and iron works.

13. WEST VIRGINIA has a population equal to that of Connecticut, and an area five times as great. Its western boundaries are formed by the Ohio River and its tributaries. On the east are ranges of the Appalachian system. The fertile lands are mainly in the west, along the Ohio valley.

The chief agricultural crops are cereals and tobacco. Bituminous coal, petroleum, iron, and salt are the only very valuable mineral products. West Virginia claims more coal than any other state. Its coal area is estimated at 16,000 square miles. The state has great timber resources, both of pines and hardwoods.

There are about 1500 miles of railway in West Virginia. The Baltimore and Ohio road, with its branches, is the only important system.

Wheeling, the largest city, is a railroad center, situated on the Ohio River in that part of the state called the "Pan Handle." This place has great iron and glass works, lumber-mills, and railway repair shops, and the largest nail factory in the United States.

At **Charleston**, the capital, on the Kanawha River, are salt springs from which 300,000 barrels of this mineral are made every year. **Parkersburg**, on the Ohio, has great petroleum refineries. **Mannington** is the center of the oil production of the state. **Fairmount**, on the Monongahela, is the most important city in the coal-mining business.

14. NORTH CAROLINA has a population about equal to that of Virginia, and an area one-fourth larger. The coast region is low; the west, high and mountainous; the intermediate area is a sandy strip, known as the "Pine Barrens."

Two-thirds of the state is forest-covered, affording building-timber of many varieties. In the seaboard section are yellow pines, while hardwood trees, especially oak, chestnut, and hickory, abound in the middle and western parts. Pine lumber, pitch, tar, turpentine, and rosin are the staple forest products.

A large acreage of North Carolina is devoted to Indian corn. Cotton is raised in two-thirds of the counties, and is the chief crop of the eastern and lower-middle parts of the state. Tobacco is the leading product of the upper-middle counties. Rice is cultivated in the coast lands, and the vine in nearly all sections. Gold, silver, copper, iron, and zinc are the principal mineral products.

There are about 2000 miles of railway within the state, and the inlets and rivers furnish 1000 miles of navigable waterways. The factory industries of North Carolina are of small importance as compared with its agriculture, mining, and lumbering,

Wilmington, on Cape Fear River, is the only port of this state whose waters are deep enough to admit large vessels. Cotton and lumber are shipped from here in large quantities, and Wilmington ranks next to Savannah in the exportation of naval stores. Here are cotton-mills, machine factories, and turpentine distilleries.

Raleigh, the capital, is centrally situated on the line where the cotton and tobacco areas meet, and is an important market for both of these crops.

Durham, 26 miles north of Raleigh, is widely known for its manufactures of the "yellow leaf" tobacco of the surrounding country. **Salisbury** and **Charlotte** are the most important places in the gold-mining section. **New Berne**, on the Neuse River, has a considerable coast trade in pine products and bale cotton. Almost every large town in North Carolina distills turpentine, and has some trade in cotton and tobacco.

15. SOUTH CAROLINA is about half as large as Florida, and has a population three times as great. As is the case with other South Atlantic states, there is a low coast country, a higher midland belt, and a western mountain section. In South Carolina these three areas are nearly equal to one another. Rice, of which this state produces more than any other, and sea-island cotton, are cultivated in the Atlantic lowlands; short-staple cotton in the midland region; and Indian corn in the west. Forests cover the greater part of the state, the yellow pine being the most valuable timber growth. Phosphate rock is dredged from the river-beds, and dug from the marshes near the seaboard, especially in the vicinity of Charleston. About thirty companies are engaged in this business. Mineral deposits in great variety occur in this state, but are not much worked.

The manufactures of South Carolina are almost wholly confined to working up the natural products above named. Thus there are many lumber-mills, turpentine distilleries, cotton-mills, and establishments for the manufacture of phosphate fertilizers. Within the state are about 2000 miles of railway. From the Atlantic Coast Line road several branches connect with the generally parallel Richmond and Danville system of the interior country.

Charleston, the largest city, has a fine harbor, and an extensive coastwise trade. The staple shipments are of cotton, both short-staple and sea-island, rice, lumber, and pine products. Important local manufactures are those of fertilizers and chemicals.

Georgetown and **Beaufort** are other busy ports. Both of them send out lumber and pine products, and Beaufort is one of the chief markets for phosphates and sea-island cotton. **Columbia,** the capital, is the principal trade center of the interior.

16. GEORGIA has double the area of South Carolina, and a population half as large again. It is the leading manufacturing state of the South. The northern part is hilly and mountainous. More than half the total area is a great plain, sloping toward the Gulf and the Atlantic.

In 1890 Georgia ranked second among the cotton states, this crop flourishing best in the middle and southwestern counties. Rice and tobacco are other staple crops.

In southern Georgia are vast areas of pine forest, and live-oak is abundant in the southeast. Iron and coal are mined in the northeastern section. The principal factory industries are iron-smelting and the manufacture of cotton and wool.

Atlanta, the capital and largest city, is favorably situated on the railway routes between New Orleans and the northeastern states, and between Chicago and the Southeast. It is a great market for iron, tobacco, and cotton, and has extensive and growing manufactures of cotton, iron, and paper.

Savannah is situated near the mouth of the Savannah River, and is the leading commercial city of Georgia. It ranks first among our seaports in the shipment of turpentine, and is second to New York only, among Atlantic ports, in its shipment of cotton. It has also a valuable trade in lumber, rice, and rosin.

Brunswick is the most important lumber port on the South Atlantic coast. **Augusta,** on the Savannah, and **Athens,** in the northern part, are the leading cities of Georgia in cotton manufacture and the trade growing out of it.

At **Columbus,** on the western border, cotton and woolen goods, flour, engines, and machinery are made. **Macon,** in the central part, has great iron works and cotton factories. **Rome,** in the north, has numerous iron foundries, steel works, and machine shops.

17. FLORIDA, the southeastern state of the Union, has an area but little smaller than that of Georgia, and a population about one-fourth as large. The surface lies wholly in the coast plain, and is nearly all low and almost level. The state has more sea-coast than any other, and the climate and productions are similar to those of the West India Islands.

Cotton, rice, and maize are cultivated in the northern counties. Oranges, lemons, pineapples, and other tropical fruits are produced in the southern and eastern parts, especially along the course of the St. John's River. Large areas near the Gulf coast are being reclaimed by drainage, and planted with sugar-cane, to which the climate and soil are admirably suited. In this state are vast beds of phosphate rock which are thought to exceed in value all other similar deposits.

Pineapple Farm, Florida

The manufactures of Florida are of little importance as compared with other industries, There is an active coasting trade from Pensacola, Key West, the St. John's River, and Fernandina to Baltimore, Philadelphia, and New York.

Jacksonville, the largest city, is situated on the St. John's River, fifteen miles from the sea. Pine lumber, red cedar-wood, and oranges from the plantations near **Palatka**, on the same river, are shipped north from this port. **Fernandina** is a cotton and lumber market, and ships fruits to the North and to England. **Tallahassee**, in the north-central part, is the capital.

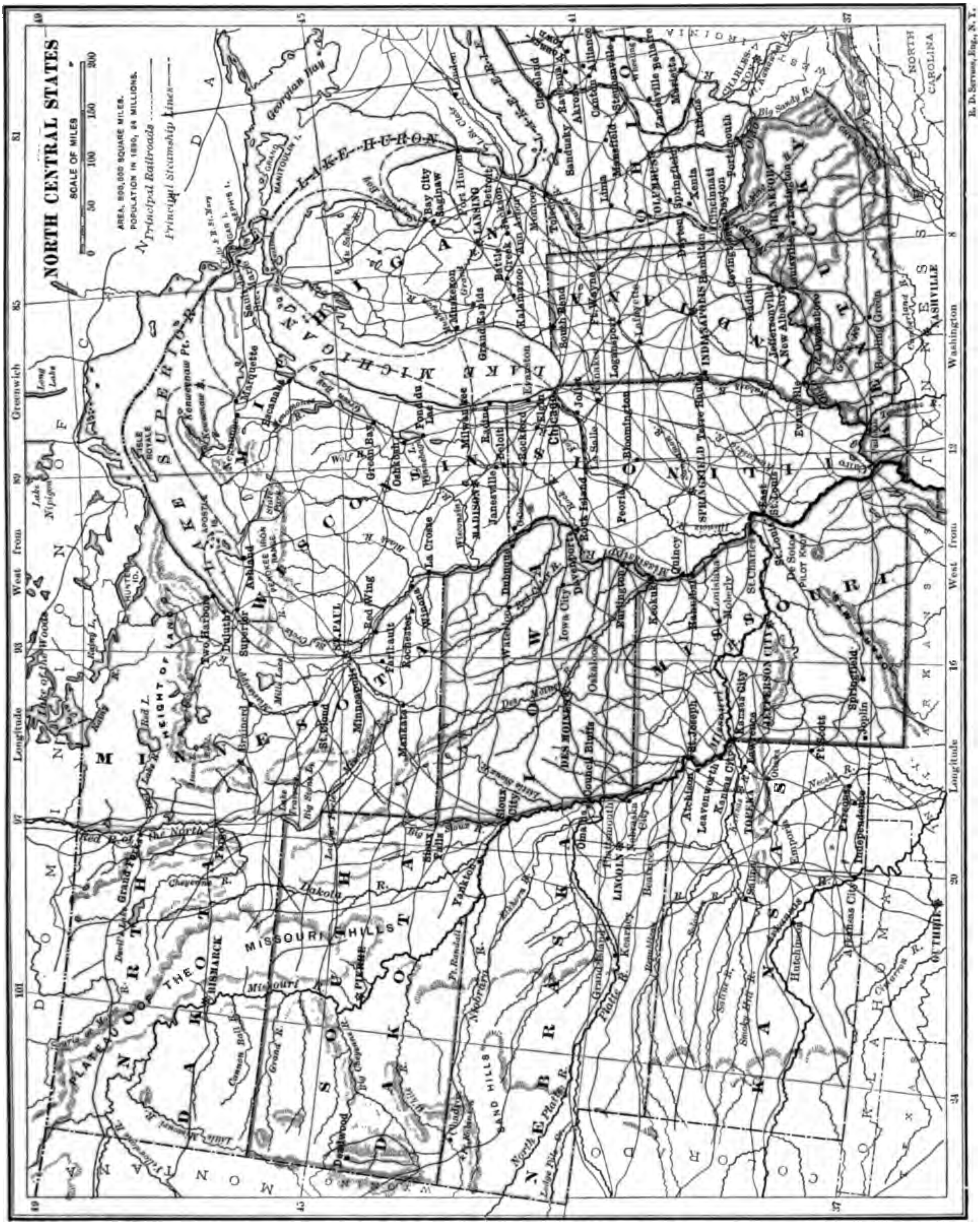
Key West has great cigar factories, and sends to market the sponges derived from the neighboring fisheries. The principal Gulf ports are **Pensacola** and **Appalachicola**. Both are markets for the yellow pine of the country to the north of them. More lumber is shipped from Pensacola than from any other port of the United States.

2. THE NORTH CENTRAL STATES

This group comprises the thirteen states of the upper Mississippi valley. That river so divides them that six are east of it, and six west of it, while one, Minnesota, is intersected by it. The Missouri River from the northwest, and the Ohio River from the northeast, pour their waters into the main stream in the lower part of this section, while four of the Great Lakes form partial boundaries of six of the states of this group.

Fifty years ago there was in this section no state west of the Mississippi, and the states between that river and the Atlantic Highland were but thinly peopled. Ohio, Indiana, and Illinois were then called "Western" States, and Iowa and Nebraska, till many years later still, were a wilderness known as the "Far West."

In the more fully settled and populous Union of our own times these thirteen commonwealths are better to be described as North Central. The states of this group, their resources, products, and trade will be treated of in the order of their admission to the Union.


NORTH CENTRAL STATES
SCALE OF MILES
0 50 100 150 200
AREA, 800,000 SQUARE MILES.
POPULATION IN 1890, 24 MILLIONS.
Principal Railroads
Principal Steamship Lines
Longitude West from Greenwich
Longitude West from Washington
MINNESOTA
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
IOWA
MISSOURI
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
MISSOURI HILLS
PLATEAU OF THE COTEAU
E. D. Servoss, Eng., N. Y.

1. KENTUCKY. — Kentucky is about as large as Ohio, but only half as densely peopled. The eastern half is upland; the western half is lower and generally level. Two-thirds of the area of the state are forest-covered.

Iron is mined in the eastern counties, good coking coal in the southeast, and petroleum in the south-central part. Kentucky's wealth, however, lies mainly in the products of a very fertile soil. In the yield of tobacco, hemp, and flax, this state ranks first in the Union. Indian corn is the staple food crop.

The state is famous for its fine breeds of horses. The best stock farms are in the "blue-grass" counties, between the Ohio and Kentucky rivers. The bluish-green grass, which gives name to this region, grows from running rootlets, survives both drought and winter cold, and thus affords good pasturage the year round.

The great items of Kentucky manufactures are distilled spirits from the corn, bagging and rope from the hemp crop, besides cured leaf-tobacco and smoking-tobacco of excellent quality.

Louisville, the largest city, is situated on the rapids of the Ohio River, opposite New Albany, Indiana. It is a busy railway center and river port, and the greatest market in the world for leaf-tobacco. The chief local industries are whiskey-distilling, pork-packing, the tanning of sole leather, and the manufacture of plows.

Covington and **Newport** are situated on the Ohio River, opposite Cincinnati. These places are separated by the Licking River, a tributary of the Ohio, but form what is practically one community. At Covington are extensive distilleries, tobacco factories, glass works, and stove foundries. Newport is essentially an iron-manufacturing town, having great iron foundries, rolling-mills, and steel works.

Lexington is situated near the center of the state, in the blue-grass region. Bagging, rope, carriages, spirits, and flour are the great factory products of this town. It has excellent railway communications, and is the trade depot of a rich farming country. **Frankfort** is the capital.

Owensboro, on the Ohio, is the market and depot of a tobacco-farming region. Tobacco-curing is therefore an important industry of this place. Here also are whiskey distilleries, wagon factories, and flour and lumber mills.

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2. OHIO is about half as large as Minnesota, and has a population nearly three times as great. The Ohio River forms all of the southern boundary, and Lake Erie most of the northern. The surface is a generally level tableland of great fertility. This state has also rich and varied mineral deposits. In the southeastern third are vast beds of coal, iron, and building-stone, besides wells of petroleum and salt. The agricultural staples are corn, wheat, oats, and tobacco, wool, livestock, and dairy products. The manufactures of Ohio are of very great variety. The chief items are: flour and pork products; woolen clothing; leather and shoes; lumber and furniture; liquors and tobacco products; paper and publications. Iron and steel manufactures are produced all over the state, and in the lake ports shipbuilding is an important and growing industry. In Ohio, as in all the states of the great agricultural basin, farming machinery and implements, and carriages and wagons, are manufactured in every large city.

The transportation facilities of this state are good. The trunk lines of railway traverse it east and west, and branch lines radiate in all directions from the numerous cities. Lake Erie on the north, and the Ohio River on the south and southeast, are among the busiest waterways in the world. The Miami Canal from Toledo to Cincinnati, and the Ohio Canal from Cleveland to Portsmouth, connect these natural waterways.

Cincinnati, in the southwest, on the Ohio, is the metropolis of the state, and the most important city of the Ohio valley. It is a great railway center, is the southern terminus of the Miami Canal, and is connected by a suspension bridge with Covington, Kentucky. Among the varied industries of this city, its manufactures of clothing, pottery, beer, books, furniture, and shoes are especially worthy of mention. Here also are extensive steel works and pork-packing establishments.

Other important places *on the Ohio* are: **Portsmouth**, the southern terminus of the Ohio Canal, where are great iron works; **Marietta**, which has a busy trade in petroleum; **Bellaire**, with glass works, nail factories, and wire factories; and **Steubenville**, which has glass works and iron and steel mills. All these towns participate in the active commerce of the river on which they are situated.

Cleveland is the largest of the *lake cities* of Ohio. It has a good ship channel at the mouth of the Cuyahoga River. Here are important shipyards for the construction of all kinds of vessels for the lake trade. This port is an important depot in the exchange of coal and manufactured goods from the East for the copper ores, iron ores, and grain from the region of the upper lakes. Iron-working in all its branches is Cleveland's greatest industry. Flour, rubber goods, furniture, and refined petroleum are other staple products. This city has considerable trade in Ohio wool.

Toledo, near the entrance of Maumee Bay, is an important railroad center and lake port. It has a valuable trade in grain, lumber, hides, and wool. Here is one of the largest wagon factories in the world. Mowers and reapers, furniture, and pumps are manufactured more extensively in Toledo than anywhere else in the state. The grain elevators of this port are of very large capacity.

Sandusky, on Sandusky Bay, is the only other lake port of Ohio of much commercial consequence. This city has a large lumber trade, and manufactures a good deal of furniture.

Of the *interior towns* of the state: **Springfield** manufactures agricultural implements and machinery, and has an active trade in grain and livestock; **Athens** manufactures furniture and machinery; **Columbus**, the capital, has great tanneries, blast furnaces, and planing-mills, and manufactures cars, car-wheels, and machinery; at **Mansfield** steam-engines are made; at **Akron**, flour, paper, drainage tile, and iron goods; at **Ravenna** are glass works and woolen-mills; and at **Xenia** cordage and glass are manufactured. Steam-engines and railroad cars are made at **Lima**; woolen goods, paper, and tools at **Hamilton**; bagging, white lead, and farm implements at **Alliance**; steam-engines, steam-cranes, stoves, glassware, and paper at **Zanesville**. **Youngstown**, on the Mahoning River, is in the heart of the coal region. It has great rolling-mills and twenty blast furnaces. At **Canton**, Stark County, woolen goods, iron bridges, farm implements, paper, and watch cases are manufactured. **Dayton**, on the Miami River, turns out railway cars, stoves, and machinery, of a great yearly value.

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3. INDIANA has an area about half that of Nebraska, and a population twice as large. In other words, Indiana is four times the more densely peopled. When Nebraska was admitted into the Union in 1867, Indiana had been a state for half a century.

The soil of Indiana is very fertile, and the prairie surface has a gradual slope toward the southwest. About one-fifth of the area of the state in the west and southwest is underlaid with deposits of bituminous coal. Indiana is, however, the most famous as an agricultural state. The staple field crops are corn, wheat, oats, and hops. Swine, sheep, and cattle are raised in great numbers, supplying pork, wool, and dairy products of great aggregate value. Lumber and iron ores from Michigan furnish Indiana with the raw materials for her leading factory industries — iron and steel working of all kinds, and the manufacture of furniture and farm implements and machines. As is the case with [illegible] the West [illegible]

Indianapolis, the capital, is situated in the central part of the state. [illegible] lines of railway [illegible] this important commercial center. Here are extensive slaughtering and pork-packing establishments, grain elevators of large capacity, iron and steel works, and manufactories of furniture and farming-implements.

On the Ohio River are **New Albany** and **Jeffersonville**, opposite Louisville, Kentucky; **Evansville**, in the coal mining region of the southwest; and **Madison**, midway between Louisville and Cincinnati. At New Albany woolen goods, plate glass, and iron wares are made. At Jeffersonville, railway cars and locomotives and river steamboats are built. The factory products of Evansville have a value of $5,000,000 a year. The principal items are carriages, furniture, and iron and steel goods. At Madison, engines and boilers, leather goods and furniture are made.

South Bend, in the northern part, is well known for its output of carriages, farm wagons, and furniture. **Fort Wayne**, in the northeast, is an important railway center. Here railway supplies, carriage wheels, and plows are the principal industrial products. **Logansport**, in the north central part of the state, has an extensive trade in grain and pork products. **Terre Haute**, on the Wabash, is an important railway center. Iron working is the chief industry.

4. **ILLINOIS** is, in area, almost exactly equal to Wisconsin, but has a population more than twice as great. The contrast is partly due to the fact that northwestern Wisconsin is but thinly settled, though it is mainly owing to the density of population in and near the great city of Chicago.

Illinois is a great plain, sloping to the southwest. With its deep and fertile soil, it is an agricultural state [illegible]

About half the population is engaged in farming. The staple food crops are corn and wheat. The raising of cattle and swine, dairy-farming, and wool-growing are leading occupations among the farmers. In the production of coal this state ranks second to Pennsylvania only. The deposits are wholly bituminous, and the coal measures underlie half the area of Illinois. Lead is mined in the northwestern part near Galena.

The nature of the manufactures of this state will be shown in what follows.

Stock-yards, Chicago

Chicago, on Lake Michigan, is the second city of the United States in population and wealth, the largest of the lake ports, and the greatest railway center and food market in the world. In addition to its unrivalled railway facilities, Chicago has water communication with the seaboard at New York and at the mouth of the

St. Lawrence, as well as with all points on the Mississippi River and its navigable tributaries. A glance at the map will show that this great city has grown up at the point where land travel and trade, east and west, must pass in order to avoid the lakes. It is near the point, also, where Lake Michigan, one of this system of inland seas, with all its advantages for commerce by water, penetrates most deeply into the heart of our country. As a result of these connections and of this favorable situation, Chicago has become a vast distributing center for one of the most productive regions of the globe. It is now, also, one of the greatest of manufacturing cities. Among its industries the receipt, storage, and transshipment of grain, and the dressing and packing of beef and pork are foremost. Corn comes to the grain elevators of Chicago chiefly by rail; wheat, by both land and water; and cattle and swine come mainly by rail to the great stock-yards. Chicago, like every other large city, has local industries of great variety. Clothing, boots and shoes, books, furniture, and manufactures of iron are produced in great quantities. Steel rails are, perhaps, the most important product of the rolling-mills of Chicago.

Peoria, on the Illinois River, is the second city of the state. Here are the largest distilleries of corn whiskey in the country, besides manufactories of glucose and starch.

The mills of **Rockford** utilize the fine water-powers of Rock River in the manufacture of watches, paper, and textiles. **Rock Island,** situated near the point where the same river flows into the Mississippi, also has fine water-powers. Farm implements, glass, and a variety of lumber products are made at this place.

Quincy, on the Mississippi, in the west-central part, has extensive distilleries, and manufactures machinery and wagons. **East St. Louis**, on the Mississippi, opposite St. Louis, Missouri, is a great railway center.

Elgin, on the fine water-powers of the Fox River, is famous for its watches. **Joliet**, an important railway center about forty miles southwest of Chicago, turns out great quantities of barbed wire, drainage tile, and paper. The Illinois and Michigan Canal, which connects Chicago with the Illinois River, passes through Joliet. **Bloomington** is the seat of the extensive shops of the Chicago and Alton Railroad. **Springfield**, the capital, is an important railway center, and has varied manufactures.

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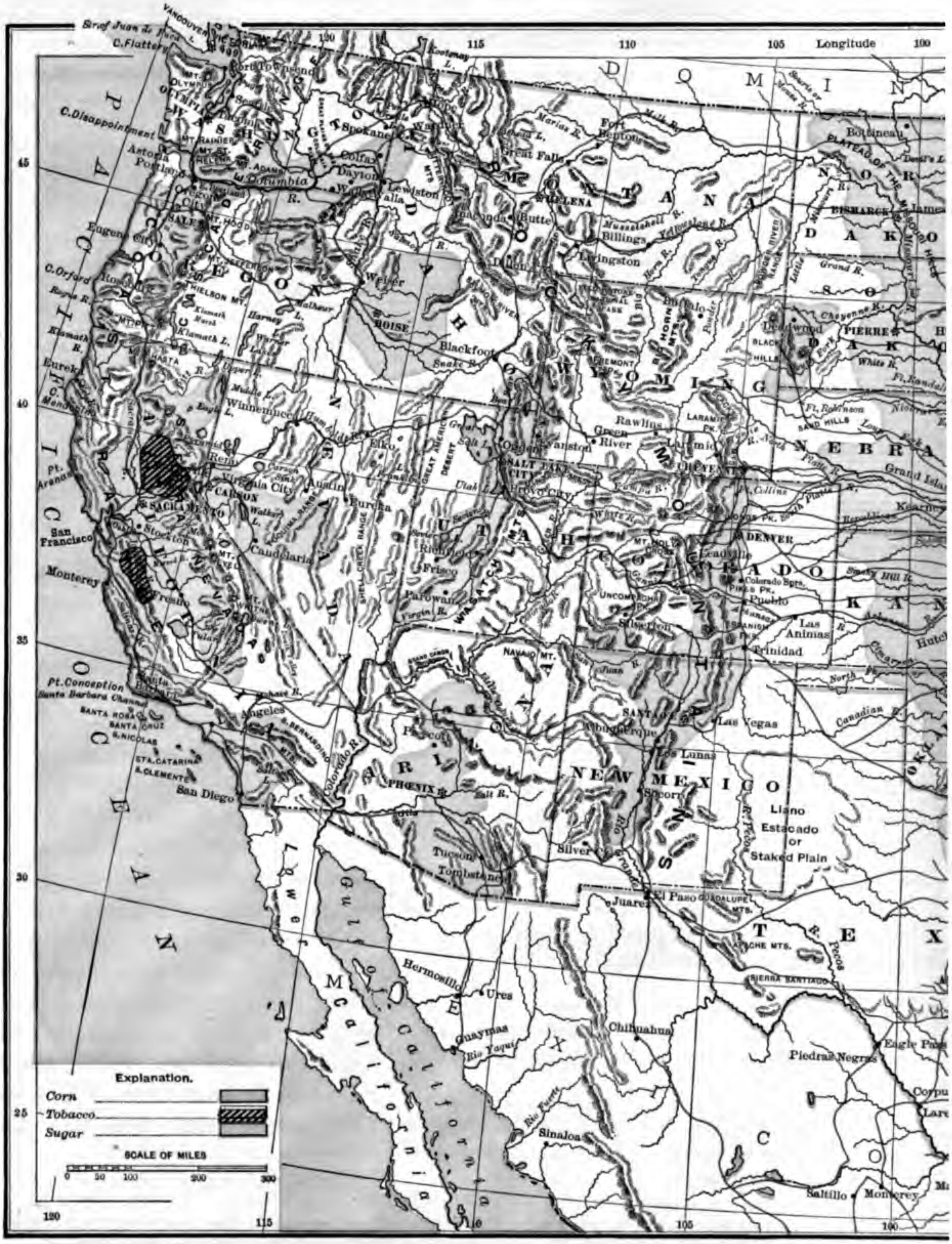
5. MISSOURI is about as large as North Dakota, and has a population fifteen times as great, or about equal to that of New York City and Brooklyn taken together. Coal is mined in the northwest, lead in the south, and iron in the southeast. The state, however, is essentially an agricultural one, the soil being for the most part very fertile. Corn, wheat, and tobacco are the staple crops, and stock-raising is an important industry.

St. Louis, on the Mississippi, has a population of about half a million. It is the great railway, industrial, and commercial center of the middle portion of the Mississippi valley. It employs thousands of men in the handling of grain, animal products, tobacco, and cotton, and has been well called "the wholesale grocery for the Southwest." The principal industrial products of this city are flour, glassware, bricks, beer, and iron and steel goods in great variety.

Kansas City, on the Missouri, is the commercial center of the Missouri valley. It has, in particular, a vast trade in agricultural implements, cattle, and flour. The stock-yards are among the largest in the world, and the business in dressed beef and pork products is enormous. Kansas City, Kansas, on the same side of the Missouri, is practically a part of the same community. As a railway center this city is second to Chicago only.

St. Joseph, on the Missouri, has fine railway connections, extensive foundries, and meat-packing establishments, and manufactures woolen goods and flour. **Hannibal**, on the Mississippi, is an important lumber market. Here are fine


Str. of Juan de Fuca
C.Flattery
VANCOUVER
Longitude
120
115
110
105
100
D O M I N
C.Disappointment
Astoria
Portland
W A S H I N G T O N
Spokane
Colfax
Dayton
Walla Walla
Lewiston
Columbia R.
MT. RAINIER
MT. ADAMS
MT. HOOD
SALEM
Oregon City
Eugene City
O R E G O N
C.Orford
Rogue R.
Klamath R.
THIELSON MT.
Klamath L.
Harney L.
Malheur L.
Weiser
BOISE
I D A H O
Blackfoot
Snake R.
M O N T A N A
Fort Benton
Great Falls
HELENA
Butte
Billings
Livingston
Musselshell R.
Yellowstone R.
Marias R.
Milk R.
Bottineau
PLATEAU OF THE MISSOURI
N O R T H
BISMARCK
D A K O T A
Grand R.
S O U T H
Cheyenne R.
PIERRE
Deadwood
BLACK HILLS
White R.
Ft. Randall
MT. SHASTA
Eureka
C. Mendocino
Pt. Arena
Winnemucca
Humboldt R.
Elko
Reno
Carson Sink
Virginia City
CARSON
Austin
Eureka
Walker L.
Candelaria
SACRAMENTO
Stockton
San Francisco
Monterey
Fresno
MT. WHITNEY
N E V A D A
C A L I F O R N I A
W Y O M I N G
FREMONT PK.
BIG HORN MTS.
Rawlins
Green River
Evanston
Laramie
LARAMIE PK.
CHEYENNE
Ft. Robinson
SAND HILLS
N E B R A S K A
Loup R.
Platte R.
Grand Island
Kearney
Republican R.
Ogden
Great Salt L.
SALT LAKE CITY
GREAT AMERICAN DESERT
Utah L.
PROVO CITY
Sevier L.
Richfield
Frisco
Parowan
Virgin R.
WAHSATCH MTS.
U T A H
Ft. Collins
DENVER
Leadville
MT. HOLY CROSS
C O L O R A D O
Colorado Sprs.
PIKES PK.
Pueblo
UNCOMPAHGRE
Silverton
SPANISH PKS.
Trinidad
Las Animas
Smoky Hill R.
K A N S A S
Hutchinson
Cimarron R.
North Fork
Canadian R.
Pt. Conception
Santa Barbara Channel
SANTA ROSA
SANTA CRUZ
S. NICOLAS
STA. CATARINA
S. CLEMENTE
Los Angeles
S. BERNARDINO MTS.
Mohave R.
San Diego
Colorado R.
NAVAJO MT.
San Juan R.
Little Colorado R.
Prescott
PHOENIX
Salt R.
A R I Z O N A
Tucson
Tombstone
SANTA FE
Albuquerque
Las Vegas
Los Lunas
Socorro
N E W M E X I C O
Silver City
Rio Grande
R. Pecos
Llano Estacado or Staked Plain
El Paso
Juarez
GUADALUPE MTS.
APACHE MTS.
SIERRA SANTIAGO
T E X A S
Lower California
Gulf of California
Hermosillo
Ures
Guaymas
Rio Yaqui
Chihuahua
Rio Fuerte
Sinaloa
M E X I C O
Piedras Negras
Eagle Pass
Corpus
Laredo
Saltillo
Monterey
P A C I F I C O C E A N
45
40
35
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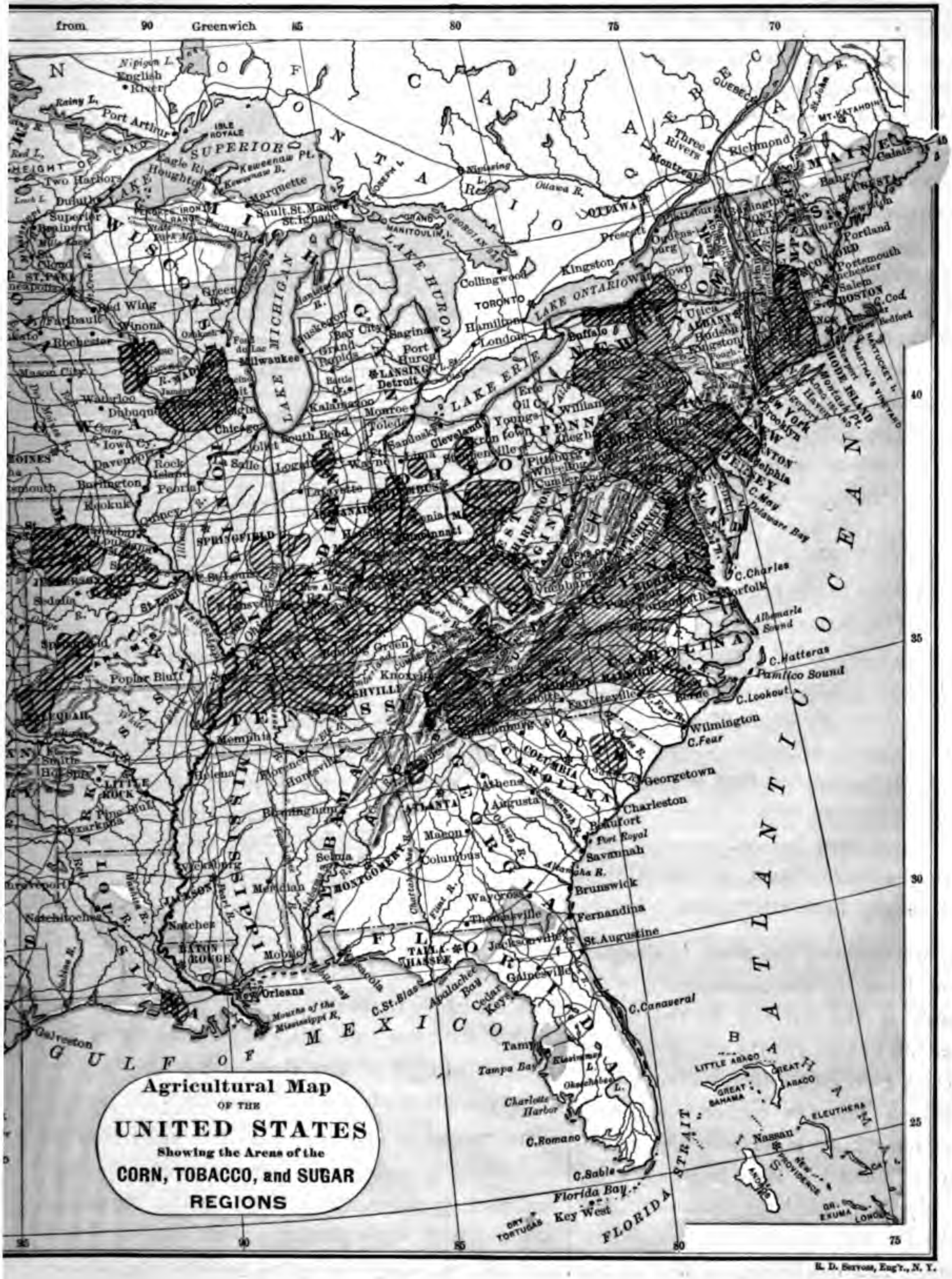
Explanation.
Corn
Tobacco
Sugar
SCALE OF MILES
0
50
100
200
300



Agricultural Map
OF THE
UNITED STATES
Showing the Areas of the
CORN, TOBACCO, and SUGAR REGIONS

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grain elevators, flour-mills, tobacco factories, packing-houses, and car works. **Springfield**, in the southwest, manufactures machinery. **Jefferson City** is the capital.

6. MICHIGAN is about as large as Florida, and has a population five times as great. The state consists of two peninsulas, and all of the Great Lakes except Ontario border upon it. The Upper Peninsula has a rugged surface, and is rich in deposits of iron and copper. The Lower Peninsula is for the most part a plain, and contains beds of coal and salt. Both peninsulas have large areas of forest. The soil is, in general, fertile. Sheep-farming and wheat and fruit raising are the principal agricultural industries.

In the production of iron this state ranks second to Pennsylvania only; in that of copper, to Montana only; while in the production of salt it takes the lead. The output of sawed lumber is greater than that of any other state, and accordingly, we find that the characteristic manufactures of Michigan are those of wood, or into which wood largely enters, such as sashes, blinds, doors, wagons, carriages, furniture, and farm implements.

The state has excellent railway facilities, and plays an important part in the trade of the Lakes. St. Mary's Falls Canal, in the Upper Peninsula, has already been referred to.

Detroit, the metropolis of the state, is situated on the Detroit River, in the southeastern part. This city stands at the gateway to the upper lakes, and owes most of its growth and prosperity to the lake commerce. The Grand Trunk and Michigan Southern railways center here; and Detroit carries on a busy trade with the neighboring Province of Ontario. Here are busy shipyards, grain elevators of large capacity, and extensive works for the manufacture of engines, cars, iron bridges, and machinery, as well as for the smelting of the iron and copper ores of the Upper Peninsula.

Grand Rapids, so named from the rapids of Grand River, on which it stands, turns out more furniture than any other city in the world. From the gypsum beds near by vast quantities of plaster are derived.

Saginaw, **East Saginaw**, and **Bay City**, on the Saginaw River, do a great business in lumber, lumber products, and salt. Bay City, which is near the outlet of the river into Saginaw Bay, is a famous shipbuilding port. At **Kalamazoo**, in the southwest, plows, harrows, windmills, fanning-mills, blinds, doors, etc., are made. **Battle Creek**, about twenty miles east of Kalamazoo, manufactures threshing machines in great quantities. Saws, steam-engines, and boilers are made at **Muskegon**. **Marquette** and **Escanaba**, in the Upper Peninsula, are the greatest ports in the world for the shipment of iron ore. **Jackson**, in the southern part, is the site of the shops of the Michigan Central Railway. **Lansing** is the capital.

7. IOWA has about the same area as Illinois, and a population half as great. The abundant drainage of the state is partly into the Mississippi and partly into the Missouri. The surface is one great prairie of deep and very fertile soil. Accordingly, Iowa is essentially an agricultural state. Corn, oats, beef, pork, and wool are the staple products. In the valley of the Des Moines River are extensive beds of bituminous coal, and there are rich deposits of lead in the northeast, opposite the galena region of Illinois. Iowa is well supplied with hardwood timber.

This state has 7000 miles of railroad within its borders, and all of the cities named below are railway centers of much consequence.

Des Moines, the capital, is in the heart of the coal country, and manufactures alcohol, glucose, and pork products. **Sioux City**, on the Missouri, has excellent water-powers. Here are foundries and machine shops and great pork-packing establishments. **Council Bluffs**, on the Missouri, opposite Omaha, Nebraska, at the point where the Union Pacific Railway crosses the river, is a very busy commercial city.

On the Mississippi River the most important places are: **Dubuque**, which manufactures wagons and plows; **Davenport**, at the rapids, opposite Rock Island, Illinois, where woolens, flour, and glucose are made; **Burlington**, which produces machinery, cars, and carriages; and **Keokuk**, at the lower rapids of the Mississippi, where pork-packing and iron-founding are the chief industries.

8. WISCONSIN has an area about equal to that of Iowa, and a population somewhat smaller, or about equal to that of North Carolina. The surface is a rolling plain of some elevation, with a highland in the north, near Lake Superior. There are abundant forests of pine and hardwoods. Iron and copper are mined in the highland, and there are deposits of lead and zinc in the southwest, near the galena region of Illinois. Most of the farming is done in the southern half, with the cereals, hops, flax, and livestock for its principal products. The chief manufactures of the state are of lumber, textiles, and iron.

Milwaukee, on Lake Michigan, in the southeastern part, is the largest city. It is famous for its breweries and brick-yards. The city is mainly built of the cream-colored brick produced here. Steam-engines, leather goods, and flour are great items of local manufacture. Milwaukee is an important railroad center and lake port. **Racine**, still further to the south on Lake Michigan, manufactures woolen goods and wagons, and has the largest threshing-machine factory in the world.

The Fox River valley is a great natural depression, and from Lake Winnebago to Green Bay in the northeast, it has a descent of nearly 200 feet. The water-powers thus afforded are abundant throughout the year. **Fond du Lac** is, as the name denotes, at the head of Lake Winnebago; **Oshkosh** stands on its western shore; and **Green Bay** is situated at the mouth of Fox River. These three places are wood-working towns, turning out great quantities of shingles, staves, spokes, hubs, sashes, doors, blinds, and matches.

On Rock River, **Janesville** manufactures cottons, woolens, and flour, and at **Beloit**, water-wheels, windmills, and farming-tools and machines are made.

La Crosse, on the Mississippi, does a great business in lumber, and **Ashland**, near Lake Superior in the north, is an important point for the shipment of iron ore. **Superior**, on the lake of that name, near Duluth, is an industrial town of growing importance. **Madison** is the capital.

9. MINNESOTA is about twice as large as Ohio, and has a population only about one-third as great. Most of the surface is an undulating plateau of considerable fertility. Both soil and climate are very favorable to the growth of wheat, and the pine forests of the state cover about one-quarter of the total area. Accordingly wheat-farming and lumbering, and the manufacture of flour and lumber products of all kinds, are the great industries of Minnesota. Very recently, however, rich beds of iron ore have been opened in the extreme northeast.

On the northeast is Superior, the uppermost of the Great Lakes; and the Northern Pacific Railway, traversing the state, connects Duluth with the wheat-fields of the Red River valley.

Minneapolis, on the Mississippi at the Falls of St. Anthony, is the greatest flour-milling city in the world, and one of the greatest lumber markets and lumber-manufacturing centers in America. The yearly output of the flour-mills is nearly 10,000,000 barrels. Of this, about one-third is shipped to foreign countries, constituting about one-fourth of the total flour export of the United States. In manufacturing this flour the Minneapolis mills grind about 45,000,000 bushels of wheat annually. The Pillsbury "A" mill is the largest flour-mill in the world, having a daily capacity of 7500 barrels. The saw and planing mills of Minneapolis have an annual output of the value of $10,000,000, and this lumber is manufactured into barrels, boxes, cars, wagons, and many other products aggregating a value twice as great. In the decade 1880–1890 the population of Minneapolis increased nearly fourfold.

St. Paul, the capital of Minnesota, is situated on the Mississippi River, at the head of steam navigation, a few miles east of Minneapolis. A vast traffic in wheat, flour, and lumber, by both rail and river, centers in this place, which is also the most important depot for the jobbing or distributing trade to all parts of the "New Northwest." The greatest local industries are beer-brewing and the manufacture of lumber products of all kinds.

Duluth is a growing city at the head of Lake Superior, at the eastern terminus of the Northern Pacific Railway. The harbor has a fine artificial breakwater. The essential feature of the commerce of this port is the shipment of wheat from the Red River country down the lakes, in exchange for Eastern manufactures and coal.

On the Mississippi the three towns of **Winona**, **Red Wing**, and **St. Cloud** trade in wheat and lumber, and manufacture flour and lumber products. In the southeastern quarter of the state **Faribault**, **Mankato**, and **Rochester** manufacture flour, wagons, and farm implements. From **Two Harbors**, on Lake Superior, are annually shipped about 1,000,000 tons of iron ore.

10. KANSAS, the southwestern state of this group, is about as large as Minnesota, and has a population somewhat greater. Most of this population is settled in the eastern half. The surface is an undulating plateau, sloping gently toward the east and southeast. There is little forest area. The soil of the eastern half is fertile, especially along the streams, and agriculture is the chief occupation of the people. The western half, except near the rivers and streams, is a dry, half-barren area, on which some cattle and sheep are pastured. There are numerous railways in the eastern counties, and Kansas is traversed by the Union Pacific and Atchison, Topeka, and Santa Fé trunk lines. There are few cities of much size.

On the Missouri River: **Kansas City** has great stock-yards and does a large business in meat dressing and packing. **Leavenworth** is the center of a busy railway and river trade. Here are extensive grist-mills, saw-mills, wagon factories, and machine shops. At **Atchison** eight railways center. The principal products of local industry are flour, bricks, carriages, and furniture.

Topeka, the capital, is situated *on the Kansas River*, in the heart of a fine farming country. This city is an important trade depot, and manufactures carriages, flour, bricks, and drainage tile. **Lawrence**, on the same river, has fine water-powers, manufactures flour and lumber products, and has a great trade in grain.

In the southeastern part **Fort Scott** has flour-mills and woolen-mills; **Parsons** has railway repair shops and manufactures plows and drainage tile; and **Independence** is the trade center of a rich agricultural region. **Wichita**, in the south-central part, on the Arkansas River, is a growing city, and the market-town of a fine agricultural country.

11. NEBRASKA is about as large as South Dakota, and has a population three times as great, or about equal to that of the city of Philadelphia. Like Kansas and the Dakotas, the western part of this state lies in the region of the Great Plains. Here cattle-herding is the important occupation. The surface has a gradual slope toward the Missouri River, and the soil of the eastern part of the state is deep and fertile, yielding immense crops of corn, wheat, and oats. There is comparatively little timber land in Nebraska, and no great mineral wealth. Most of the inhabitants live in the southeastern third of the state. Here are two large cities and many growing towns.

Omaha, on the Missouri, opposite Council Bluffs, Iowa, has a thriving railway and river trade. The Union Pacific Railway and other important lines converge here. The railway repair shops, distilleries, and lead and silver smelting-works are very extensive. In the decade 1880–1890 the railways and industries centered here led to a phenomenal growth of this city — it increased from 30,000 to 140,000 in population. **Lincoln,** the capital, in the southeast, is a thriving city and railroad center. There are very productive salt springs near by.

12. NORTH DAKOTA is somewhat larger than New England, and is very thinly inhabited. Most of the population is settled in the eastern counties, in the fertile Red River valley. The Missouri River is navigable throughout its course in this state, and the Red River for about 200 miles. There is very little timber land in North Dakota. The wheat-growing areas are the finest in the world. Sheep-farming and cattle-herding are increasing yearly in importance.

Bismarck, the capital, on the Missouri River; **Fargo,** near the head of navigation on the Red River, at the point where the Northern Pacific Railway crosses it; and **Grand Forks,** further north on the same river, are the chief centers of trade.

13. SOUTH DAKOTA is somewhat greater in both area and population than North Dakota. Like the latter state, it was but recently settled. Most of the people live in the southeastern part, though there is considerable population in the towns of the Black Hills, in the southwest. The Missouri River is navigable throughout its course across the state, and receives most of the drainage. Corn is the staple field product.

Sioux Falls, on the rapids of Big Sioux River, does a great flour-milling business, and has excellent quarries of granite. **Deadwood,** in the Black Hills, is the principal mining town. There are rich deposits of gold, silver, and tin ores in this region. Gold, however, is the chief product of the mines. At Deadwood are extensive refining and stamp mills. **Pierre,** the capital, and **Yankton,** both on the Missouri, are busy and growing centers of river and railway trade.

3. THE SOUTH CENTRAL STATES

This group consists of six states and two territories. All of the drainage is into the Gulf of Mexico. The Mississippi and its tributaries, together with the many rivers that flow directly into the Gulf, afford thousands of miles of navigable waterways. The railway mileage is much less than that of the North Central States.

The state of Texas covers almost half the total area, and contains about one-fourth of the population, of this section. These states have, in the main, a sub-tropical climate and a very fertile soil, and agriculture is the principal occupation of the people. Coal and iron are mined in the northeastern part of this area, and cattle-herding is a great industry in the western part.

The six states were admitted into the Union in the following order: Tennessee, Louisiana, Mississippi, Alabama, Arkansas, and Texas.

1. TENNESSEE is approximately equal in both area and population to the State of Virginia.

In its general surface features Tennessee resembles Kentucky, being high in the east, hilly in the central part, and an undulating plain in the west. Rich deposits of coal and iron are worked in East Tennessee. The same mineral beds extend into northern Georgia and Alabama. In the western half of the state great crops of cotton, corn, tobacco, and hemp are raised.

Memphis, on the Mississippi, is one of the most important cotton markets of the interior. This city is a great commercial depot from which manufactured goods of all kinds are distributed to the southwest. Leading local industries of this place are the manufacture of flour, tobacco, and cotton-seed oil.

Cotton Seed in Transit to the Oil-Mills

Nashville, on the Cumberland River, is the capital and largest city. Here centers a great trade by both river and rail. This city has large cotton-mills, carriage and furniture factories, paper-mills, and cotton-seed oil-mills.

Chattanooga is the center of the industries which have grown up through the development of the coal and iron deposits. The extensive steel works turn out machinery in great amount and variety. **Knoxville** is another iron-manufacturing place. Iron wares, railway cars, furniture, paper, and tobacco are made here. Both these cities are situated on the Tennessee River at points where its course is navigable, and both have excellent railway facilities.

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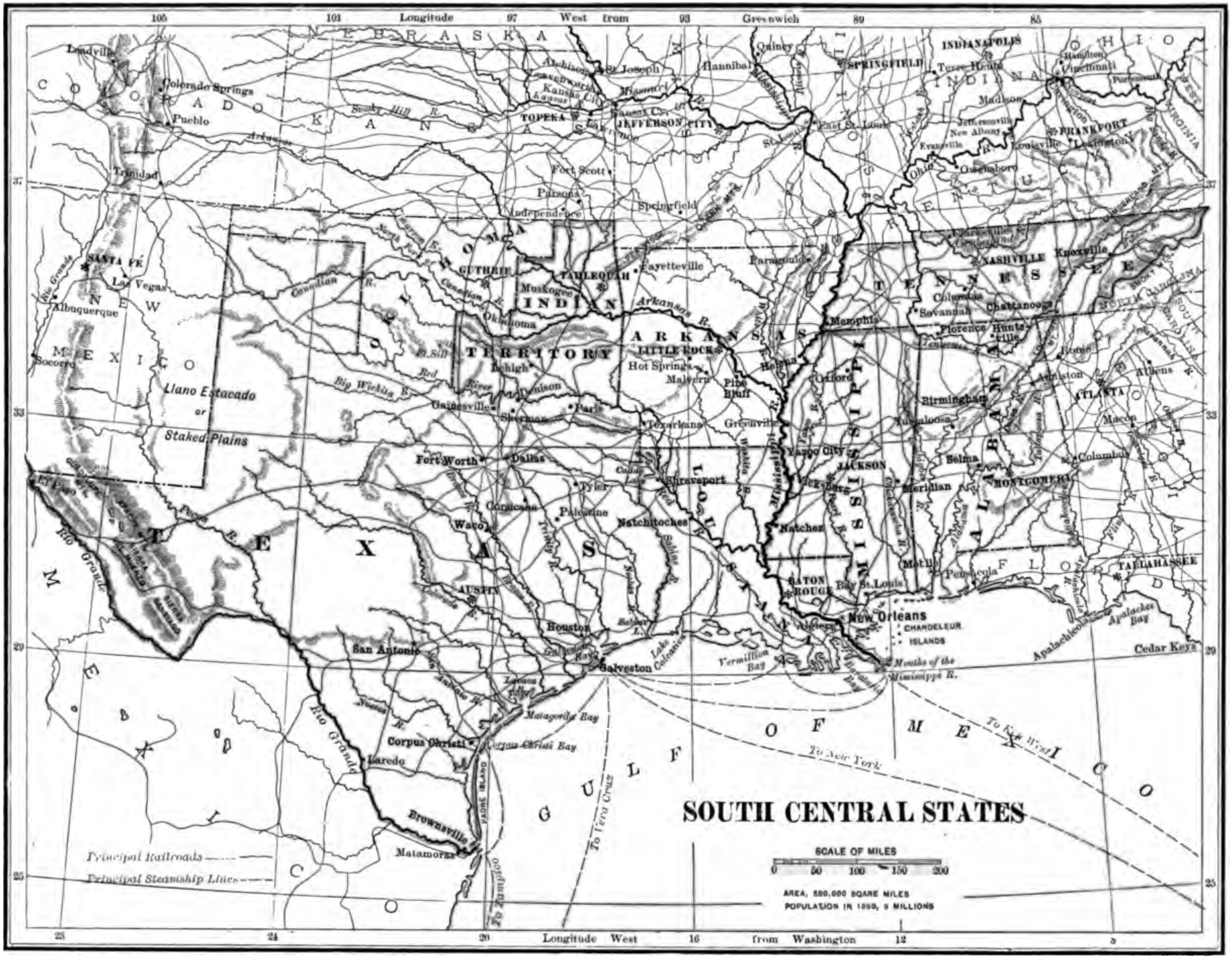
2. LOUISIANA is, in area, about equal to New York, and has a population less than one-third as great, or almost exactly half as large as that of Texas. Most of Louisiana is a plain only a few feet above the level of the Gulf. Below the junction of the Red River with the Mississippi, about one-third of the state consists of a rich, alluvial soil brought down in ages past by the waters of the Mississippi system and here deposited. The same cause has made the borders of the streams of the southern Mississippi valley extremely fertile. The lands thus enriched by river deposits are known as bottom lands, to distinguish them from the less fertile, higher grounds adjoining.

Of the agricultural staples of Louisiana, sugar is raised in the southern half, rice in the coast lands, and cotton in almost all the parishes. Rock-salt is mined in Iberia parish, in the south-central part. The principal manufactures of the state are those of New Orleans. Crude sugar and molasses, however, are produced on every great cane plantation, and several river towns have cotton-oil factories.

New Orleans, on the Mississippi, 100 miles from the Gulf, is the chief city of the South. It has a population about equal to that of Pittsburg or Buffalo. The residence portion of the city consists almost wholly of detached houses and villas, and the whole covers an area of 150 square miles. New Orleans is essentially a depot of supplies and a commercial port. Trunk lines of railway from the upper Mississippi valley, from the Atlantic States, Texas, Mexico, and



R. D. Servoss, Eng'r, N.Y.

the Pacific coast, center here. South Pass, at the mouth of the Mississippi, has been deepened to thirty feet, and the largest ocean steamships ascend the river to New Orleans. The principal feature of the improvement at South Pass is a system of jetties, as they are called. These are made of willow mattresses, sunk by weighting with stone, and laid along both banks of the river, to contract the current, and cause it to scour out the channel.

The shipments from this port in 1890 were more than $100,000,000 in value. The great items of this export business were the cotton and cotton oil of Louisiana and Mississippi, and the sugar, molasses, and rice of Louisiana. The imports are relatively small. In 1890 they were valued at $15,000,000. From this city great quantities of corn, flour, pork, tobacco, and manufactured goods are distributed throughout the neighboring states. The city's factory products have a great total value in a few principal items, such as clothing, boots and shoes, tobacco and cigars, hardware, and plantation tools and machines.

Baton Rouge, the capital, on the Mississippi. **Shreveport**, on Red River, and **Natchitoches**, near the same river, have an active commerce in plantation products and supplies.

3. MISSISSIPPI is about as large as Pennsylvania, and has a population one-fourth as great. The northern half of the state is prairie country of some elevation. The southern half is a low plain containing large areas of pine forest. About half the drainage of the state is directly into the Gulf of Mexico. Mississippi ranks third in the production of cotton, Texas and Georgia being first and second. Most of the crop finds its way to market through the port of New Orleans. The corn crop of the state is also very large.

The manufactures of Mississippi are relatively small, and but little diversified. There are cotton-mills at **Meridian**, in the east-central part, and cotton-seed oil-mills at **Yazoo City**, on Yazoo River, and at **Vicksburg**, on the Mississippi; but the business of these places and of **Jackson**, the capital, near the center of the state, and of **Natchez**, on the Mississippi, consists mainly of the trade in cotton and plantation supplies. The country between the Yazoo and Mississippi rivers is the richest cotton-growing region in the world.

Bay St. Louis, in the southeast, ships the pine lumber of the Pearl River region. Most of the turpentine and rosin finds its way to market by way of New Orleans.

4. ALABAMA is approximately equal to North Carolina in both area and population. Like Georgia and the Carolinas, this state has the three physical sections, — mountain country in the north, an alluvial coast plain, and lying between them a region of upland prairie. Iron and coal are mined in the north, accounting for the recent industrial development of this state; great crops of cotton and corn are grown in the uplands; and forests of yellow pine extend across the southern part. There are few large cities

Birmingham, in the north-central part, is an important railway center of the mining country, and has some of the most extensive iron-working establishments in the United States. **Florence**, on the Tennessee River, is also an iron-manufacturing town. **Huntsville**, in the extreme north, has iron foundries and cotton-mills.

Montgomery, the capital, on the Alabama River, is a great cotton market. **Selma**, on the same river, manufactures cotton goods, cotton oil, and machinery. **Mobile**, the only seaport and the largest city, ships great quantities of pine products and cotton. Here are cotton-mills, lumber-mills, and shipyards.

5. ARKANSAS somewhat exceeds Louisiana in both area and population. In the counties along the Mississippi the surface is low and level, and often swampy. The interior is higher and hilly, while parts of the west and northwest are considerably elevated. The Arkansas, the White, and Ouachita are navigable tributaries of the Mississippi, and cross the state southeastwardly.

Arkansas is a farming state, having as yet no large cities. In the river-valleys and along all the streams the soil is very rich. Cereals are cultivated in the northern half of the state; corn, cotton, and tobacco in the southern.

Little Rock, the capital, on the Arkansas River, near the center of the state, **Helena**, on the Mississippi, and **Pine Bluff**, on the Arkansas, are the most considerable markets in the state. They ship Arkansas products, especially cotton, cotton seed, and tobacco, and receive and distribute all kinds of plantation supplies.

6. TEXAS has a population about equal to that of Massachusetts, and an area thirty times as great. The entire population of the United States might live in Texas, and yet it would be no more densely peopled than Massachusetts. The state extends through nearly eleven degrees of latitude. The surface slopes southeastwardly from the Plains to the coast belt. Texas is pre-eminently an agricultural state. In the production of cotton, it is the foremost state, with Mississippi and Georgia close rivals. Vast numbers of cattle are herded on the plains. Indian corn is a staple crop. Sugar is raised in some of the coast counties. Sheep-farming is an increasing occupation, especially in the valley of the Rio Grande.

Galveston, situated on the best harbor of the state, on Galveston Bay, ranks second to New Orleans alone among the ports of the Gulf. The staple exports are cotton, cotton oil, hides, and wool to New York and Liverpool. The value of all merchandise exported in 1890 was $24,000,000.

Cotton Yard and Steamer, Mississippi River

Houston, forty-five miles northwest of Galveston, is the most important railway center of the state, handling the bulk of the staples exported at Galveston. This city has varied and important manufactures, including cars and wagons, brass goods, sheet-iron and iron ware, cotton, flour, and tinned beef.

Dallas, in the northeast, where the Texas Pacific meets other important railways, turns out great supplies of cotton oil, flour, wagons, and farm implements. **Fort Worth**, thirty miles west of Dallas, does a large business in the products of a prosperous farming country. **Austin**, the capital, on the Colorado River, manufactures flour, furniture, and iron goods. **San Antonio**, seventy-five miles southwest of Austin, at the junction of the Southern Pacific and Great Northern roads, handles vast quantities of grain, cotton, wool, and hides. **Waco**, on the Brazos, does a similar trade, and manufactures flour and cotton goods. **Corpus Cristi**, on the bay of the same name, makes considerable shipments of animal products and lumber. **Brownsville**, near the mouth of the Rio Grande, controls most of the commerce of that great river.

OKLAHOMA and **INDIAN TERRITORY** do not materially differ in climate and products from the neighboring areas of Kansas, Arkansas, and northern Texas. They are thinly settled and little developed.

4. The Western States

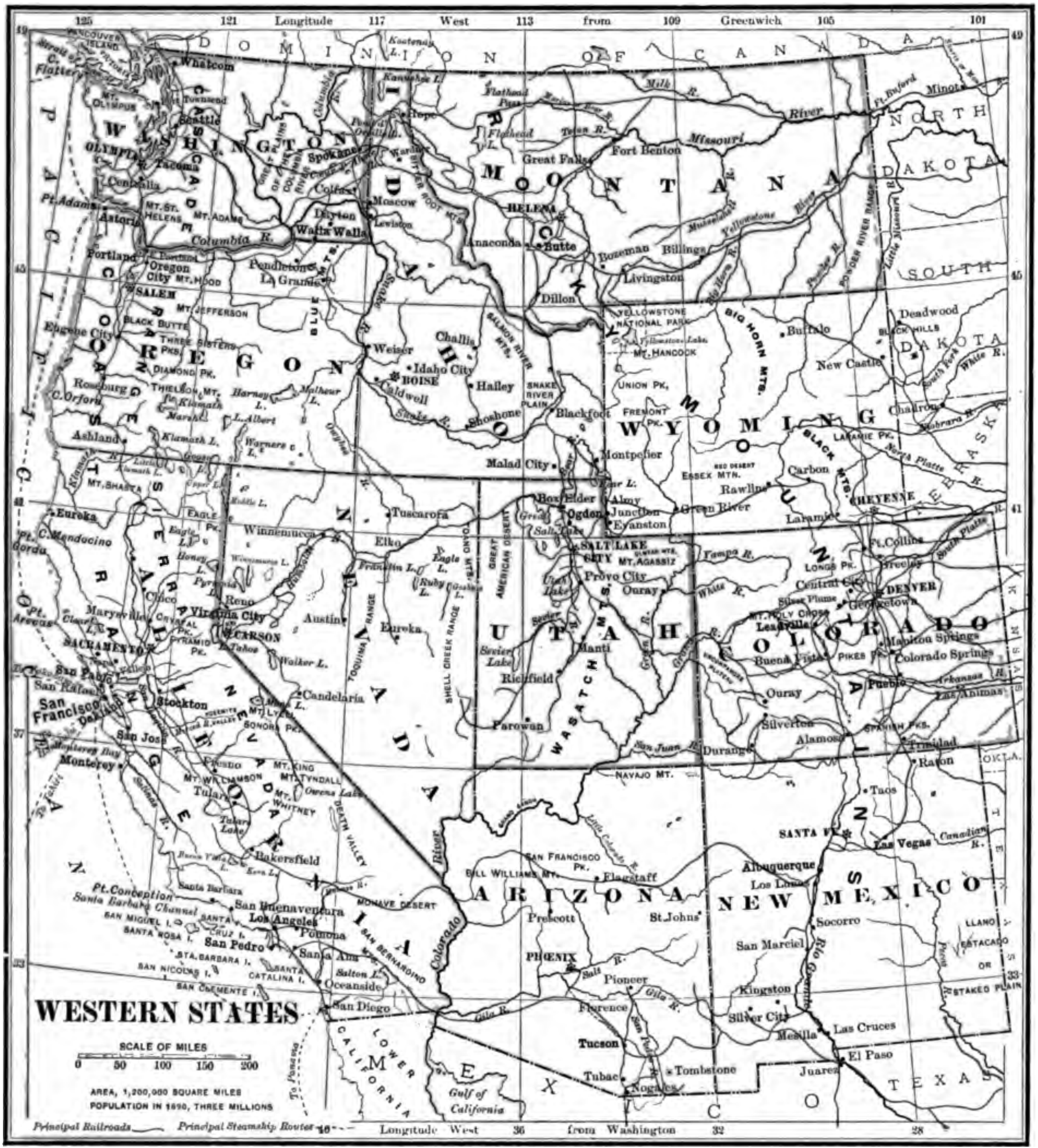
The eight states and three territories of this section cover one-third of the total area of the United States, including Alaska. Yet the population of this vast region is only about one-twentieth as large as that of the states that lie to the east of it. To illustrate the contrast in another way: The Western States, 150 times the size of New Jersey, have a total population little more than twice as great. This sparseness of population is due partly to the fact that the states of this group have been settled only in comparatively recent times; but principally to the fact that, owing to the rugged and mountainous surface of most of the country and to the scantiness of the rainfall, agriculture can be pursued only in relatively small portions of the total area. Fine agricultural lands are found between the Pacific coast and the Cascade and Sierra Nevada ranges, and accordingly we need not be surprised to learn that two-thirds of the people of the Western States live in California, Oregon, and Washington.

In the many valleys of the highland region, considerable areas can be cultivated by resort to irrigation. Such areas, however, are comparatively small, and cattle-herding and sheep-farming are, and must continue to be, the principal industries of the high plateaus. The mountain ranges of the Western States are, as we have seen, rich in mineral deposits, and mining is therefore the leading occupation in the mountain towns.

1. CALIFORNIA has an area as large as Washington and Idaho taken together, and a population nearly three times as great as the sum of theirs. The long central valley is drained from the north by the Sacramento, and from the south by the San Joaquin. Both are navigable for long distances, and both flow into the Bay of San Francisco. The climate is almost tropical. In the great valley the summers are hot and dry, while the winters are cool and rainy. The soil of the valleys and adjoining hill country is very fertile.

The staple products of California are wheat, fruits, gold, and wool. A good deal of lumbering is done along the Sierra Nevada range, and in the upper coast region. Gold-mining, formerly the chief industry, still yields about $15,000,000 a year. Wheat has long been a great California staple, but in recent years the cultivation, drying, canning, and shipment of fruits in great variety has become a business of enormous proportions. In the southern part of the state large areas have been brought under cultivation by systems of irrigation. Most of the factory industries are centered in San Francisco. This is also true of coastwise and foreign commerce and domestic trade.

San Francisco, the metropolis and the great industrial and distributing center of the Pacific Coast, is about as large as Cincinnati. Its splen-



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	Area in Sq. M.	Population in 1890		Area in Sq. M.	Population in 1890
California	158,360	1,208,130	Montana	146,080	132,159
Oregon	96,030	313,767	Wyoming	97,890	60,705
Washington	69,180	349,390	Utah T.	84,970	207,905
Colorado	103,925	412,198	Arizona T.	113,020	59,620
Nevada	110,700	45,761	New Mexico T.	122,580	153,593
Idaho	84,800	84,385	Total	1,187,535	3,027,613

did harbor, a great sheet of water consisting of the bays of San Francisco and San Pablo, is accessible at all times through the Golden Gate for ocean steamships of the deepest draught. San Francisco has trade communication with the eastern half of our country by way of the Central Pacific and Southern Pacific railways, by way of the Isthmus of Panama, and by the sailing route around Cape Horn. Steamers ply regularly from this port up and down the coast, and to the Pacific ports of South America. Ocean steamers carry passengers and goods to Honolulu, and thence to the Australian colonies. Before the development of the coal-beds of the Puget Sound country, nearly all of the coal used in the Pacific States was brought from New South Wales.

The great exports of San Francisco are wheat, wine, wool, and dried and canned fruits. Important imports are tea from Japan, and sugar from the Hawaiian Islands. Leading manufactured products of the city are: machinery for hydraulic mining and quartz crushing, clothing and leather goods, refined sugar, tinned ware for canning, and farm implements and machines.

Vallejo, on San Pablo Bay, **San Jose**, thirty miles southeast of San Francisco, **Sacramento**, the capital, and **Stockton**, thirty miles south of Sacramento, are important centers of the wheat business. **Eureka**, on the northwest coast, has an immense lumber trade. **Oakland**, ten miles from San Francisco, on the east side of the bay, manufactures hosiery and hardware. It is the second city of the state in population, and is connected by ferries with San Francisco.

Coast towns south of the Golden Gate are **Monterey, Los Angeles, San Pedro,** and **San Diego**. Los Angeles is surrounded by sheep farms, vineyards, and orange groves, and ships great quantities of raisins and oranges. San Pedro is a lumber port. San Diego, in the extreme south, does a large business in wheat, wool, and hides.

The fruits chiefly canned in California are peaches, pears, cherries, plums, and apricots. The orange crop of 1890 was more than a million boxes,—nearly half of them from Los Angeles County. Fresh fruits of all kinds are now shipped to the East in refrigerator cars. The transportation of such perishable merchandise as fresh fruits across the entire continent has only become possible in very recent years, by the invention of cold-storage, and the use of very fast freight trains.

2. OREGON is about as large as Wyoming, and has a population five times as numerous. The Cascade Range, crossing the state from north to south, separates the fertile and well peopled Willamette valley from the elevated plateau of the central and eastern counties. Most of the drainage is into the Columbia River. The climate is cooler than that of California. The soil of the Columbia valley is well suited to the growth of wheat. This and other cereals, especially oats, are produced in large quantities. In the western part are great forests of "Oregon pine" and other coniferous trees. Fine grazing for cattle and sheep abounds in the eastern part. The winters are so mild that cattle graze most of the year. Salmon are taken in great quantities in the Columbia River at various points for 200 miles from its mouth. The annual value of the catch is nearly $3,000,000. Oregon has railway communication with the East by the Northern Pacific and Union Pacific railways, and with the California valley by the Oregon and California road.

Portland is situated on the Willamette, 12 miles above its junction with the Columbia, and 112 miles from the sea. These rivers are navigable for large ships to this point. The city is virtually the terminus of the Northern Pacific and Union Pacific railways. Wool, wheat and flour; oats, canned salmon, and lumber are the principal exports. Most of the wheat and flour are shipped to European ports.

Astoria, at the mouth of the Columbia, has extensive salmon canneries. The canning, smoking, and drying of salmon, or shipping them fresh in ice by railway to the East, and by steamer to San Francisco and Portland, employed, in 1890, 2000 men, mostly Chinese. **Oregon City**, on the Willamette, south of Portland, has fine water-powers, and manufactures flour and woolen goods. **Salem**, the capital, still further south on the Willamette, manufactures lumber, flour, woolen goods, leather, and furniture.

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3. WASHINGTON is about as large as Missouri, and has a population of 350,000. The surface features, climate, and natural resources are similar to those of Oregon. Coal, however, is extensively mined in the Puget Sound region, and shipped in vast quantities from its ports, and from Bellingham Bay, in the extreme northwestern part of the state. There are great pine forests about Puget Sound, and wooden shipbuilding is actively carried on upon this arm of the sea. Washington shares in the salmon catch of the Columbia River. In the northeastern part of the state are productive mines of gold, silver, copper, and lead.

Seattle and **Tacoma** are cities on Puget Sound. Seattle is the point of departure for steamer lines, and ships most of the coal of the mines near by. Tacoma, the Washington terminus of the Northern Pacific Railway, is the principal lumber market, and has extensive car and locomotive shops, and smelting works.

From **Whatcom** coal and lumber are shipped down the coast. **Spokane**, at the great falls of the Columbia, is a supply town for the mining country of the northeast. **Walla Walla**, in the extreme southeast, does a large business in wheat and wool. **Olympia** is the capital.

4. COLORADO is about twice as large as North Carolina, with a population one-fourth as great. The eastern half is an elevated, level, grassy plain. The western half is in the Rocky Mountain region. Grazing is the industry of the eastern plateaus; mining, of the western country. Fruit-culture is in many parts aided by irrigation. Gold, silver, and lead are found in the mountain counties of the state, but silver is the leading mine product. Colorado supplies nearly half of all the silver mined in the United States.

Denver, the capital, is a great railway center of the Union Pacific road and its branches and divisions. This city is the center of the great mining interests of the state and for the distribution of supplies and manufactured goods of all kinds.

Pueblo, on the upper Arkansas River, has car shops, and very large smelting and rolling mills. **Leadville**, near the center of the state, is the greatest of the silver-mining towns, and has extensive smelting-works and stamp-mills.

The states of **NEVADA**, **IDAHO**, **MONTANA**, and **WYOMING**, and the territories of **UTAH**, **ARIZONA**, and **NEW MEXICO** are thinly peopled. They have an aggregate area not much less than that of the North Central States, but their total population is smaller than that of the city of Brooklyn. The natural resources of these states and territories have been but little developed, the centers of population are few, and manufactured goods are imported from the East.

In Nevada, **Virginia City**, **Carson**, **Gold Hill**, and **Reno** are a group of gold- and silver-mining towns on and near the Comstock lode. These mines are the richest that have been discovered in the present century. The Central Pacific Railway, touching these points, crosses the California boundary not far away. Carson is the capital.

Boisé, in the silver region of Idaho, is its capital.

Butte, in Montana, first settled as a silver-mining camp, is rapidly growing in importance as a result of the discovery of great deposits of copper and silver. Montana is now the leading copper-producing state in the Union. **Helena**, on the Northern Pacific Railway, surrounded by mines of the precious metals, is the capital. Smelting-works and refineries for the treatment of ores are established here.

Cheyenne, the capital of Wyoming, is the greatest *live cattle* market in America. The town is situated on the Union Pacific Railway, and is the only shipping and outfitting point for the ranchers of a vast region.

Salt Lake City and **Ogden**, near it, are the only considerable trading centers for the silver-miners and fruit-growers of Utah. Salt Lake City is the capital.

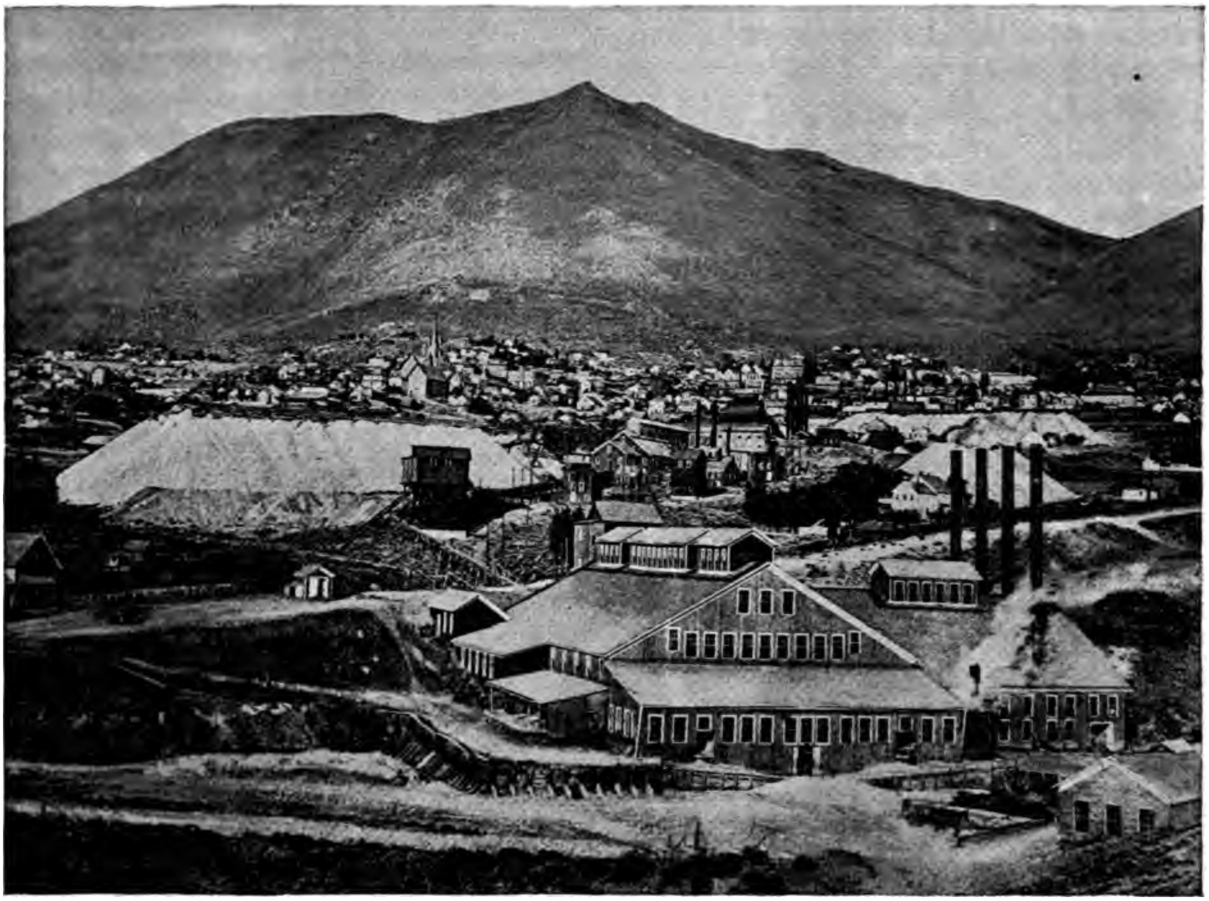
Tucson, in the southern part of Arizona, has an important trade in cattle and bullion. **Phœnix** is the capital.

Santa Fé, the capital, **Albuquerque**, and **Las Vegas**, all in New Mexico, deal in silver ore, cattle, and wool.

ALASKA has an area of about half a million square miles, the greater part of which is within, or adjacent to, the Arctic Circle. The southern coast has a moderate climate, owing to the influence of the Japan Current. The commercial importance of Alaska lies in its fisheries. Salmon in vast numbers enter the numerous rivers. The canning of this fish is now a business of great value. Considerable gold is mined. In the southeastern coast region are immense forests of spruce and yellow cedar.

The main imports into Alaska are provisions, canning-materials, and machinery. In 1890 this territory sent to market 34,000,000 one-pound cans of salmon, from 36 canneries; 100,000 seal pelts from the Pribyloff Islands; and gold to the value of $1,000,000, nearly all of it from the Treadwell mine on Douglass Island.

Sitka is the only town of any consequence. Steamers run regularly between this place and San Francisco.



Virginia City. — Site of the Comstock Lode

CHAPTER VIII

THE BRITISH EMPIRE

THE **BRITISH EMPIRE** consists of the British Isles, together with stations, colonies, and subject countries in all parts of the world.

The British Isles comprise Great Britain, Ireland, and numerous adjoining smaller islands. They are commonly known as the **United Kingdom of Great Britain and Ireland.**

Though the British Isles are styled a "kingdom," the **government** is really carried on by a congress, the members of which are elected by the voters of the islands. This congress, called the House of Commons, makes the laws, and carries them into effect by an executive committee of its own choosing. The chairman of this committee, generally called the "prime minister," wields more influence than the nominal ruler — the king or queen.

The British Parliament consists of the House of Commons and the House of Lords. The House of Lords may reject a bill passed by the House of Commons, but if the same bill is again passed by the House of Commons, it never fails to become a law. The House of Lords cannot therefore defeat, as can the United States Senate, the will of the lower House.

The British Isles are northwest of the continent of Europe, from which they are separated by the North Sea and the English Channel. Though situated in the latitude of Labrador, these islands have a moist, mild, and equable **climate**, owing to the influence of the Gulf Stream and the Atlantic winds. The **soil** is in parts quite fertile, though in the main better adapted to pasturage than to tillage. The **coast** is very irregular, being indented by so many bays and estuaries that no part of the islands is more than 100 miles distant from the neighboring seas. The **surface** of Great Britain is uneven, and in some parts mountainous; that of Ireland is mainly level. The **area** of the British Isles is three times as large as that of Ohio; the **population** ten times as great.

The United Kingdom, with its various dependencies, is the **leading commercial nation of the world.** Its merchant fleets bring raw materials from all parts of the globe, and carry back in exchange manufactured goods. Thus, cotton from the United States, wool from Australasia, and silk from China are imported into Great Britain, and there woven into fabrics which are shipped again to all the countries of the world. Besides this, British ships are extensively employed in **the carrying trade of other nations.** This is especially true of the United States, more than half of our imports and exports being carried in British ships.

A very large proportion of British trade is with our own country. We buy of the United Kingdom merchandise to the value of about $175,000,000 yearly. We sell to the same country goods of more than twice that value. The great items of **our purchases from this nation** are textile fabrics of all kinds; iron manufactures, hides, skins, leather, and leather products; drugs, tin, and earthenware. The great items of **our return sales** are cotton, grain, cattle and leather, and their various products.

I. **GREAT BRITAIN,** the larger of the two principal islands, includes (*a*) England and Wales, and (*b*) Scotland. It is nearly three times as large as Ireland, and has a population about eight times as great.

(a) **ENGLAND AND WALES** cover about half the area of the United Kingdom. The inhabitants number 30,000,000, of whom 20,000,000 are classed as "urban" or town dwellers. There are 1,000,000 vagrants and paupers. No other country of Europe, except Belgium, is so densely populated.

The western part is hilly, and includes what are called the **grazing counties,** in which wool-growing is a leading occupation. A smaller area in the eastern part covers the **corn counties,** where the chief farm products are a variety of crops and vegetables. In recent years, England has come to depend on foreign countries for most of her food-supply.

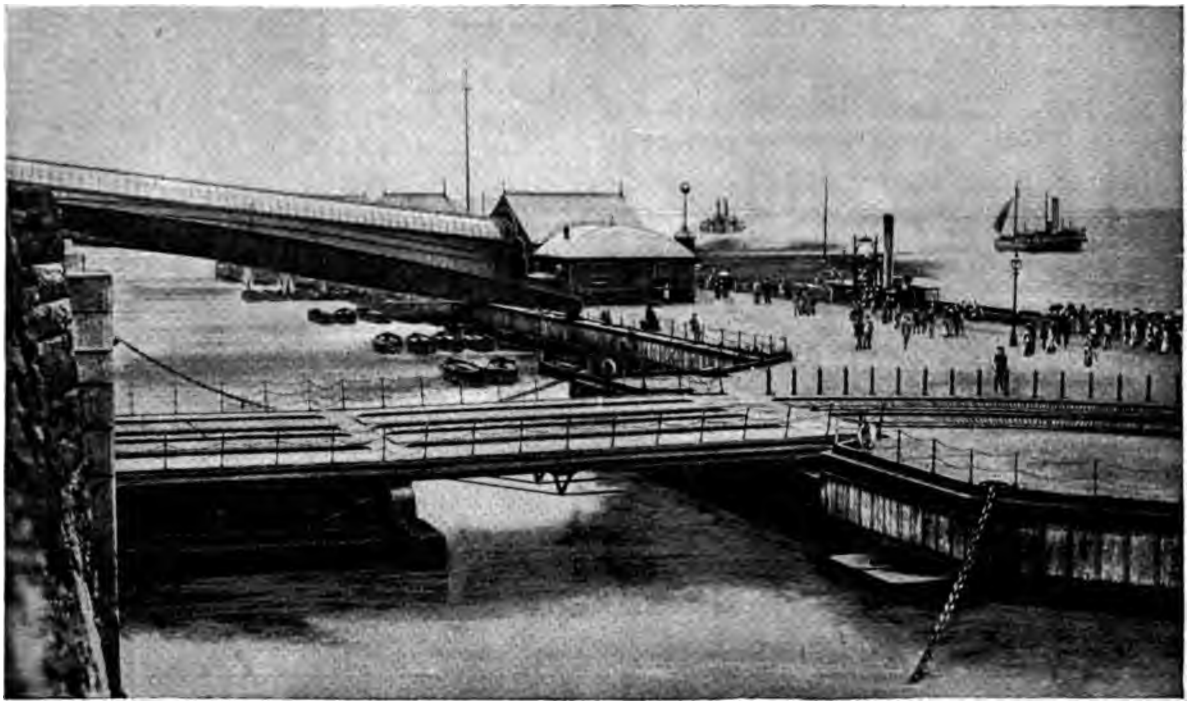
The coast-line is about 1500 miles in extent. Though the rainfall is abundant, the area of England is too small to allow of any considerable river-basin. There are, however, numerous streams that are navigable over short distances for vessels of light draught. Only four rivers — the **Humber** and **Thames** in the east, and the **Severn** and **Mersey** in the west — are important highways of trade; and these, in their navigable channels, are arms of the sea rather than rivers. About 2500 miles of **canals,** and 14,000 miles of **railways,** complete the internal trade routes of the country.

About one-half of English exports are **manufactures** of cotton and wool. Most of the cotton goods are made in Lancashire, in the northwestern part, where half a million operatives are employed in the cotton-mills. Woolen goods are manufactured in Yorkshire and in Wales.

The establishment and subsequent growth of these manufactures have been due to the vast **mineral wealth** of the kingdom, especially in coal and iron. The **greatest collieries** are in southern Wales, and in the northeastern counties of Durham and York. The richest **iron mines** are those of Cumberland in the extreme northwest. Comparatively little iron is mined in Scotland or Ireland. England exports its surplus of coal, but the product of iron is not sufficient for domestic needs, and iron ores are largely imported from the Spanish port of Bilbao. Manufactures of iron and steel rank next in value to textiles among British exports. Less valuable mineral products are the **salt** of Cheshire and the **tin** of Cornwall and Devon.

London is situated on both banks of the Thames River, at the head of ocean navigation. At high tide the river is here 30 feet deep. During the Roman occupation of Britain, this site was at the mouth of the river, or in other words, at the head of the estuary into which the Thames flows. In later times the river was embanked for miles below London, and the adjoining marshy lands were thus reclaimed. The city is about 60 miles distant from the open sea. As a seaport, London includes the whole of the river as far east as Gravesend, about 20 miles below London Bridge. It is the capital of the United Kingdom, and the largest city in the world. It is also the world's greatest seaport and financial center.

Six hundred years ago, when the westernmost of the Hanse "factories" or trading-depots was that of London, it is thought that the place had a population of about 75,000. Even then, it was the largest town in the island, and it has ever since been the political and business center. The foreign commerce of the port was, however, of no great value until the great voyages of discovery led to the founding of the East India Company, the Virginia Company, and the Hudson's Bay Company, all of them established in the seventeenth century. By the year 1800 London had increased in population till it was as large as the city of Brooklyn now is.



Floating Wharf or Landing Stage, Liverpool

Though Liverpool has in recent years become a commercial rival of the metropolis, the latter still leads in the value of foreign trade. The imports of London are greater than the exports, because the city itself contains more than 4,000,000 consumers, and is, besides, a railway center and distributing point for the whole kingdom.

A vast coasting fleet hails from this port. Having no great rival on the eastern coast, London controls most of British trade with Baltic and Mediterranean ports. Tea and other products from the East, by way of the Suez Canal, and wool from the Australasian colonies find their chief market at London, which is also the home port for most of the West India trade.

The local industries of London are as varied in character and vast in extent as the great size of the city would lead us to expect. If any occupations deserve special mention, by reason of the numbers employed in them and the value of their products, it is to be said that no other city in the world brews so much malt liquor or does so great a publishing business.

Liverpool, the second city of England in population and commerce, is situated on the river Mersey, about three miles from the Irish Sea. It is the most important port on the west coast, and is about as large as St. Louis or Boston. The Mersey is here about a mile wide. The **Liverpool docks** and wharves extend for six miles along the river, while on the opposite bank are the great docks of **Birkenhead**. The two cities are connected by railway under the bed of the Mersey, and together form one great port.

Liverpool is a city of modern growth. Previous to the invention of textile machinery and the cotton-gin, and the consequent spread of cotton culture in our Southern States, the town was a small one, though having considerable trade with the ports of Ireland. The development of cotton and woolen manufactures in the region lying back of it has made Liverpool one of the great trading-ports of the world.

The imports are chiefly *raw materials* from the United States, especially cotton, grain, and animal products. The principal exports are *manufactures* of cotton, wool, and iron.

The value of the manufactured exports, which are widely distributed, is much greater than that of the crude imports. Liverpool itself is not a manufacturing city, but sugar is refined and tobacco manufactured in great quantities at this port, where they are largely received into the kingdom.

Manchester is situated on a small tributary of the Mersey River, about thirty-five miles inland from Liverpool. With the city of **Salford**, on the opposite bank of the Mersey, it forms one community, nearly as large as the city of Brooklyn. Manchester is the center of the principal industrial district of England, and is famed throughout the world for its cotton and woolen goods. Liverpool is the port through which the foreign trade of this district has been carried on.

A canal has been constructed which enables the largest ocean steamships to come directly to the Manchester docks. This great engineering work was begun in 1886, and was opened for traffic in November, 1893. It is known as the **Manchester Ship Canal**. It is 26 feet deep, and 120 feet wide across its floor, with numerous open side-basins or widenings for the accommodation of shipping. For two-thirds of its length, this canal is little else than a new, straight, and deep channel for the Mersey itself. The principal docks, with a frontage of more than four miles, are on the Salford bank. The canal is entered from the sea at a point about four miles above Birkenhead, on the Mersey estuary.

Other Ports. — On the northeast coast are **Newcastle**, on the Tyne River, and **North Shields** and **South Shields** at its mouth, called, because of their situation, the "Tyne ports." Like **Sunderland**, at the mouth of the Wear, ten miles to the south, these places are all outlets for the product of the rich coal-mining region that lies behind them. In their harbors the greater part of the iron shipbuilding of England is done. Newcastle is about as large as Newark, and Sunderland as Providence. The other Tyne ports are much smaller.

Hull, on the Humber estuary, is a city of 200,000 people. Once chiefly famous as a fishing-port, it has now a busy continental trade, especially with Hamburg and Bremen, directly east of Hull across the North Sea. Coal is the most important export. Hull possesses a magnificent system of docks.

On the south coast, at the head of a deep land-locked inlet, is **Southampton**. Lying nearer to London than any other large English port, and being easily reached from the open ocean, this place is coming into importance as a terminus for American steamship lines. **Portsmouth**, near by, is the principal home station of the British navy.

Bristol, near the Severn estuary, has a considerable American trade, particularly in the import of sugar and tobacco from the West Indies. As a result, great sugar refineries and tobacco factories are established here. The city is about as large as Washington.

On the coast of South Wales are the ports of **Cardiff** and **Swansea**, both having a great foreign trade in the Welsh coal product. Swansea does a vast business in the smelting of lead, iron, and copper. The iron ores of northern Spain are conveniently received here; the copper ores come mainly from Cornwall and Devon, on the other side of the Bristol Channel.

Interior Towns. — The large, inland factory towns have all grown up on or near the great coal deposits.

Birmingham, a city about as large as Baltimore, is famous for its manufactures of metal wares. These include brass goods, and all kinds of iron and steel products, from the heaviest machinery to the smallest hardwares. The neighboring towns and villages have similar industries, iron as well as coal being mined near by.

Leeds, the fifth city in population, is the principal seat of woolen manufacture, and the center of a great trade in clothing and leather. **Sheffield**, about the size of San Francisco, has long been celebrated for its cutlery In the vicinity are coal and iron mines and grindstone quarries. Steel rails in great quantities are also made here. **Bradford**, a city about as large as Detroit, is the chief seat of worsted manufacture. Silk velvet is another local product. **Nottingham**, a little larger than Milwaukee, is famed for its cotton hosiery and machine-made lace. **Leicester**, about the size of Omaha, has shoe and lace factories, but is best known for its woolen hosiery.

Honiton is celebrated for its hand-made lace, **Wilton** and **Kidderminster** for their carpets, **Coventry** for bicycles and silk ribbon, **Burton-on-Trent** for malt liquors, and **Northampton** is the largest shoe town in England.

(b) **SCOTLAND** is about half as large as England and Wales, and has a population equal to that of the city of London. The country has three clearly defined physical areas: —

1. The northern half is a thinly peopled **Highland**, having a cold, damp climate, a scanty soil, and no minerals of value.

2. In the southern part is a hilly **Upland** of much smaller area, in which sheep-farming is the principal rural occupation, while the towns of the Tweed valley manufacture woolen fabrics of the best quality.

3. Lying between these regions is a central **Lowland** of considerable fertility, and containing rich deposits of coal and iron. This Lowland comprises less than one-fifth of the area of Scotland, but contains more than two-thirds of the total population.

The great **industries** of the country are the manufacturing of textiles, iron shipbuilding, and the brewing and distilling of liquors. Except in the Lowland there is little farming area, and agriculture gives employment to but a small fraction of the population. Nearly half of the inhabitants of Scotland live in the towns presently to be named.

In a great depression of the northern Highland a series of short **canals**, connecting the waters of several lakes, forms a complete water-route across the country from sea to sea. This Caledonian Canal, as it is called, was constructed early in the present century to enable vessels to avoid the dangerous voyage around the north of Scotland, but owing to the great size and draught of modern ships it is now of little commercial value. In the Lowland country the Forth and Clyde Canal connects the rivers for which it is named. It is probable that this waterway will eventually be converted into a ship-canal. The **railway** mileage of Scotland is only about one-fourth that of England, and is nearly all in the more populous southern half.

Glasgow, on the River Clyde, is the largest city of Scotland, and has the honorable distinction of being one of the best governed cities in the world. The population numbers 600,000. It has, like Liverpool, become a great city only within the last hundred years, and for somewhat similar reasons. As a port of the west coast of Great Britain it is favorably situated to receive raw materials from America. Thus, before the Revolutionary War broke up the trade, most of the tobacco from Virginia and the Carolinas found a market at this place. Similarly, raw cotton has been a great import at Glasgow in the present century. This trade was interrupted by our Civil War, but what Glasgow lost from the stoppage of it was more than made good by the development of her shipbuilding industry. For the same war threw most of our carrying trade into British hands, and nearly all the new ships required for it were built on the Clyde. Lying in the heart of the coal and iron region of Scotland, Glasgow is now the center of a great cotton-manufacturing district, and the iron shipyards here and lower down on the Clyde are the greatest in the world. The river from Glasgow to the head of the estuary was quite shallow at the beginning of this century, but its channel has been deepened so that the largest steamships now come to the splendid docks of this port.

Herring Port of Wick

The chief manufactures are of cotton goods, especially muslins, ginghams, and calicoes. In connection with bleaching and calico-printing are extensive chemical works. Among woolen fabrics are curtains, hangings, and all kinds of carpets. Marine engines, locomotives, and sewing-machines are turned out in great numbers. Glasgow controls the iron trade of Scotland, though this is much less important than the same trade in England. A large part of the west-coast herring-catch is marketed here, although **Wick,** a small town in the extreme northeast, has been for fifty years the headquarters for the Scottish herring-fisheries.

Greenock, twenty miles below Glasgow on the estuary, or Firth of Clyde, is a city about the size of Memphis. It is a sort of lower port for the commerce of Glasgow. The chief imports are iron ores and raw sugar. The great local industries are iron-smelting, iron shipbuilding, and sugar-refining. **Paisley,** with a population about equal to that of Greenock, and **Kilmarnock,** a place half as large, are other industrial towns in the vicinity of Glasgow. Paisley is famous for its woolen goods and cotton thread; Kilmarnock, for its blankets and fine carpets.

Edinburgh, the ancient capital of Scotland, is a city about as large as Cleveland, and is situated near the southern shore of the Firth of Forth. It is an educational and distributing rather than a manufacturing city, but has long been famous for its great publishing business, including establishments for type-founding, engraving, printing, and book-binding. Liquors, furniture, brass-ware, and glass are also made here. **Leith,** a town as large as Atlanta, adjoins Edinburgh, and is its port. It is an important center of trade in grain, timber, and wool from the continent, and has a busy coasting and fishing fleet.

Dundee, the third city of Scotland, is about as large as Louisville. It is situated on the Firth of Tay, forty miles north of Edinburgh. The harbor is commodious, and has an admirable system of docks, besides great shipyards. This port is the headquarters of the Scotch whale and hair-seal fisheries.

Dundee has long been known for its manufactures of flax, and still produces more linen goods than any other town in Great Britain; but the foremost industry of the city is the manufacture of jute, a business which has grown to enormous proportions within the last forty years. The raw jute comes directly to Dundee from Calcutta, and Dundee merchants have even established jute-mills in Calcutta itself. Hemp is another coarse textile imported and manufactured here. **Perth,** twenty miles above on the Tay, is a town about as large as Mobile. It has great dyeworks and bleaching fields, and manufactures muslins, ginghams, and imitation India shawls. The Tay is here quite shallow, and the foreign trade is consequently small.

Aberdeen, the fourth city of Scotland, is about as large as Indianapolis. It is situated on the northeast coast, on a harbor naturally poor, which has been greatly improved by breakwaters and piers. The industries and commerce of this port are in a flourishing condition. Woolen cloths and carpets, linen sheetings, towelings, and canvas, chemicals, machinery of many kinds, and paper and envelopes are leading products. The largest comb factory in the world is established in this place. There are busy shipyards in the harbor, and hundreds of boats from Aberdeen take part in the herring fisheries. A fine granite has long been quarried in the neighboring country districts. The city is built of this granite, and the streets are paved with it.

II. IRELAND lies west of Great Britain, from which it is separated by narrow seas. It is somewhat larger than Scotland in both area and population. The **climate** is moist and mild. The greater part of the island is a nearly level plain, and the soil is well suited to agriculture. The **inhabitants are therefore more evenly distributed** throughout the country than is the case with Scotland. Less than one-fourth of the population of Ireland is classed as urban, and there are no inland towns of much size. The coast is even more deeply indented than that of Great Britain, so that no part of the island is more than sixty miles distant from the sea. The **Shannon** is the only considerable river. It drains the central counties, is navigable almost the whole of its length, and is connected by **canals** with Dublin and Belfast on the east coast.

Ireland has little mineral wealth. There are rich deposits of **iron** ores, but these are not much worked because of the poor supply of coal. About 25,000 men are engaged in the **fisheries,** half of them occasionally, and half all the year round. Most of the catch is from the banks off the east and south coasts. From these banks fish are shipped in ice to the English markets at Bristol and Milford Haven. The mackerel fishery, along the coast from Cork to Cape Clear, is very valuable. Manufactures are not varied, and are confined to two or three cities. The best lands are devoted to pasturage. The only crops of importance are **oats, potatoes,** and **flax**; the latter is grown only in the northeast, near Belfast. External trade is mostly with Great Britain. The chief exports are cattle, sheep, butter, cheese, and eggs. Corn and wheat, **which are cheaper food products,** are, with clothing, the leading imports.

There are four large towns in Ireland, all of them seaports.

Belfast, the metropolis, in the northeast, is about as large as Cleveland, and is the only considerable manufacturing town in Ireland. It produces more linen goods than any other city in the world. All the flax of the neighboring counties is manufactured here, and additional supplies are imported from the continent. There are great shipyards at Belfast. Iron steamships for the "White Star" and other lines have been built here.

Dublin, the capital, is about midway of the eastern coast, and directly opposite Liverpool. It is a city about as large as New Orleans. Most of the direct trade with Great Britain is carried on through *Kingstown,* a few miles below on Dublin Bay. Dublin produces whisky and porter in great quantities, but has no other manufactures of consequence.

Cork, the third town, a place about as large as Fall River, is situated on a fine natural harbor of the southern coast. It ships dairy products to Great Britain. *Queenstown,* its outer port, is a place of call for American steamships.

Limerick, at the head of the Shannon estuary, is a town about the size of Wilkesbarre. The only important manufactures are linen, spirits, and malt liquors. Limerick imports corn and wheat directly from the United States, but her export trade is very small.

BRITISH POSSESSIONS. — It is estimated that the possessions of Great Britain include one-sixth of the land surface of the globe, and nearly the same proportion of its population. These possessions may be classed under three heads — (1) Naval and Military Stations; (2) Colonies; and (3) Subject Countries.

I. NAVAL AND MILITARY STATIONS. — These are ports of supply and repair for both the navy and the commercial marine of Great Britain. Some of these stations are fortified posts at strategic points, available in time of war for shelter and for coaling and provisioning. Others are so situated as to secure British control of passing trade. All of them are at convenient points on the great ocean trade routes.

(**a**) In the Western Hemisphere, the principal stations are those of the Bermudas, the Bahamas, Barbados, and the Falkland Islands. The **Bermudas** are a group of more than three hundred islands and islets situated about 600 miles east of the coast of North Carolina. But fifteen of the islands are habitable, and the cultivated area is only about 4000 acres. The staple crops are onions and potatoes, and most of the trade is with the port of New York. Accordingly, these islands are of little value to Great Britain, except as a station. The military barracks are at *St. George's* on the island of the same name. At *Hamilton,* on Great Bermuda Island, are the docks, yards, and storehouses of the naval establishment. A submarine telegraph cable connects the island with Halifax, in Nova Scotia. The **Bahamas** are an extensive group of islands lying to the east of Florida Strait. Only twenty of them are inhabited. These islands yield tropical fruits, sponges, and cabinet woods. Evaporated sea-salt is a diminishing export from Turk's Island. Sisal hemp has recently been introduced, and 8000 acres are now devoted to its cultivation. *Nassau*, on the island of New Providence, has a good harbor, and is the only considerable town in the Bahamas. The military garrison is stationed at this point. **Barbados** is the most easterly of the West India Islands. *Bridgetown*, the capital, is a station of the West Indies and Panama Telegraph Company (see *Map*, page 16), and the military headquarters of the British West Indies. It has regular steamship communication with England and the United States. This port has become a central market for the other Windward Islands — St. Lucia, St. Vincent, Grenada, and Tobago. The staple product of all the islands of this group is sugar for the English and American markets. Nine-tenths of the dense population of the Windward Islands are negroes. The **Falkland Islands**, about 250 miles east of Cape Horn, have a scanty population of Europeans. The climate is damp and cheerless. Some wool of fine quality is the only product of these islands. At the settlement of *Stanley Harbor* are yards for the repair of ships sailing "round the Horn," or through the Strait of Magellan.

(b) Two Atlantic islands, Ascension and St. Helena, are points of supply for sailing-ships. They lie more than 1000 miles west of the continent of Africa, and both are of volcanic origin. **Ascension Island** is a station of the West African naval squadron, and is resorted to by merchant ships trading to South America and the settlements of the west coast of Africa. **St. Helena**, once a very important station, has been declining in consequence ever since the Suez Canal provided a new and shorter route for steam navigation between Europe and the East. *Jamestown*, the only considerable place in the island, is still a port of call for sailing-ships that follow the old route around the Cape of Good Hope.

(c) In the Mediterranean, Great Britain has the two important stations of Gibraltar and Malta. **Gibraltar** is a fortified rocky promontory projecting into the Mediterranean from the south of Spain. The town of *Gibraltar* is situated on a bay just west of the fortress, and is a coaling-station and port of call for ships passing through the adjoining strait. The garrison numbers 6000 men. **Malta** is an island sixty miles south of Sicily, having numerous safe harbors. The population is mainly of Arab descent. *Valetta*, the chief town, is for half the year the station of the British Mediterranean fleet. Here are extensive grain storehouses and a naval hospital. The garrison is a little larger than that of Gibraltar. Malta is the most important coaling and supply station on the route to the East.

(d) In Asia, the British have three valuable seaport stations, Aden, Singapore, and Hong Kong. **Aden** is a port of the south coast of Arabia, on the Gulf of Aden, and about one hundred miles east of the Strait of Bab-el-Mandeb. The harbor is excellent, and the place is strongly fortified and garrisoned. Aden is of little consequence, except as a coaling station on the Eastern route. **Singapore**, the capital of what are known as the Straits Settlements, is situated on an island at the eastern extremity of the Straits of Malacca. The city has a population about as large as that of Rochester, consisting mainly of Chinese and Malays. The excellent harbor is approachable from either direction without pilots, and the city has a sea frontage six miles in length. Singapore possesses a fine system of docks, wharves, dry-docks, and warehouses. Owing to advantages of situation, the trade with neighboring British settlements, and in transit, has a vast annual value. As a naval and military station, Singapore is protected by a citadel and numerous fine batteries. The neighboring island of Penang is a great coaling station. **Hong Kong** is a city of China, situated on an island in the estuary of the Canton River. The population, about equal to that of Cincinnati, consists almost wholly of Chinese. The splendid harbor is a British naval station, and the island has a strong garrison of Sepoy regiments. Hong Kong is one of the greatest coaling depots in the world, and has steamship communication with Europe, Australia, and the United States. Most of the Chinese now living in our country have emigrated from this port. Owing to its excellent situation, Hong Kong commands the foreign commerce of southern China. The great items of export are tea and silk; of import, opium and cotton goods.

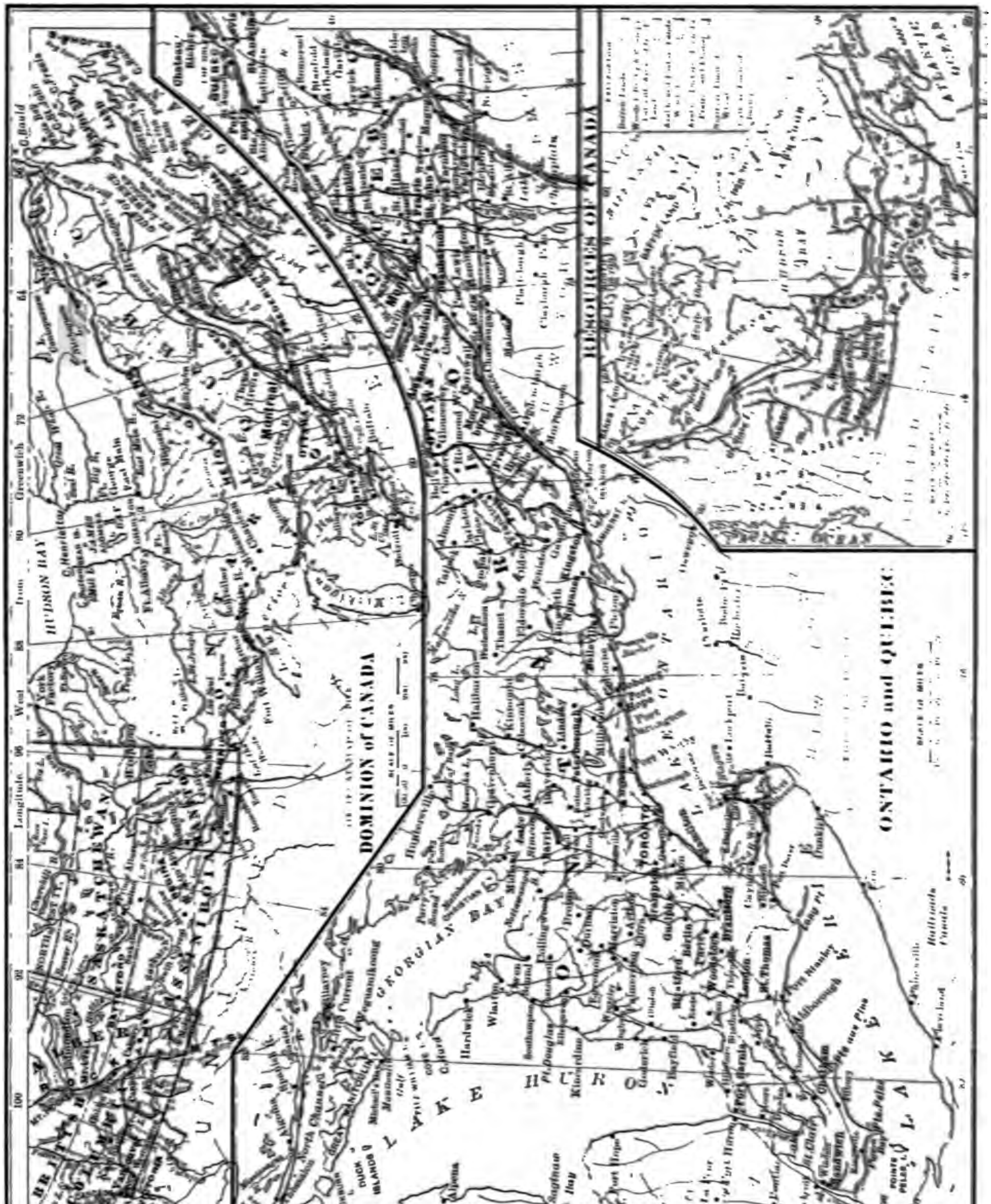
II. COLONIES. — These are countries that have been peopled, either wholly or very largely, by emigrants from the British Isles. The existing British colonies, though self-supporting, are not independent of the mother country. Their governors are appointed by the London government, and their laws may be overruled by the same authority. As might be expected, the larger share of their commerce is with the United Kingdom. The only colonies of Great Britain, using the term in its proper sense, are (1) Canada, (2) Newfoundland, (3) Cape Colony, (4) Australia, (5) Tasmania, and (6) New Zealand.

1. Canada, or the "Dominion of Canada," is situated north of the United States, and has an area somewhat larger. It consists of seven colonies, or "provinces," as they are styled, besides a vast territorial region which is for the most part not habitable by civilized man. The population of Canada numbers nearly five millions, eleven-twelfths of whom live in the eastern provinces between the Great Lakes and the Atlantic coast. In other words, all but a fraction of the Canadian people live *south of the 49th parallel of latitude*, which, in the western half of the continent, forms the boundary between Canada and the United States. The eastern provinces are Nova Scotia, Prince Edward Island, New Brunswick, Quebec, and Ontario, named from east to west. The western provinces are Manitoba and British Columbia. The inhabited parts of Canada include only *one-tenth of the total area* of the Dominion.

The seven provinces have each a separate government, while for the management of the general interests of the whole a federal parliament meets at the city of Ottawa in the province of Ontario. The chief executive of the Dominion, called the governor-general, is appointed by the English government.

The natural resources of the Dominion, though very great, are not fully developed, because most Canadian products are shut out by duties from their natural market in the United States. In the ten years' interval between the colonial censuses of 1881 and 1891 not less than a million Canadians emigrated to the United States.

Many Canadians now desire that the provinces should come into the American Union as states, in order to share in our greater prosperity. There is in the United States a considerable number of men who look with favor on this, because they believe that such a union would benefit these English-speaking neighbors of ours, and especially because almost the only dangers that threaten our peaceful relations with Great Britain would thus be averted. The enterprise of the Canadian people is somewhat depressed by the contrast between their conditions and our own, and by their situation of dependence as colonies upon a European power.


ONTARIO and QUEBEC
DOMINION of CANADA
RESOURCES OF CANADA
Longitude West from Greenwich
HUDSON BAY
JAMES BAY
SASKATCHEWAN
MANITOBA
LAKE HURON
GEORGIAN BAY
LAKE ONTARIO
LAKE ERIE
ATLANTIC OCEAN
HUDSON BAY
Montreal
TORONTO
OTTAWA
Kingston
Hamilton
London
Buffalo
Rochester
Alpena
Saginaw Bay
DUCK ISLANDS
POINT PELEE
Railroads
Canals

An area about as large in the aggregate as the state of West Virginia is devoted to crops, the chief of which are **wheat, barley,** and **oats.** About half as many acres are pasture lands for **cattle-raising** and **dairy-farming.** The forests of Canada are of vast extent, and the lumber product, chiefly of **white pine,** exceeds in value that of any other industry. The principal lumbering area lies north of the St. Lawrence, to which river the felled timber is floated down the many tributary streams. The **fisheries** rank next in importance, the product for the year 1890 being valued at $18,000,000. The cod of the Atlantic fisheries and the salmon of the Pacific rivers are the leading items of the catch. **Coal** is the most important mineral product. It is mined in Nova Scotia and British Columbia. The principal **manufactures** of Canada are those of her own products of leather, lumber, and grain.

The foreign trade of Canada is mainly with Great Britain and the United States, and is about equally divided between them. The principal **exports** are forest products, cheese, cattle, and fish. The leading **imports** are iron manufactures, wool, coal, and sugar. The last two items are imported from the United States.

The Dominion has a larger **merchant fleet** than any other British possession, the registered shipping being 7000 vessels. In 1890 there were in Canada 25,000 miles of **telegraph** lines, 20,000 miles of **telephone** wire, and 13,000 miles of **railways.** The Canadian Pacific Railway, from Montreal to Vancouver, is 2900 miles in length. The Grand Trunk Railway connects Montreal with Chicago on the west, and with Portland, Maine, on the Atlantic seaboard. The Great Lakes and St. Lawrence River provide a splendid highway of **internal navigation.**

(a) **Nova Scotia** includes the peninsula of that name, and the island of Cape Breton northeast of it. It is about as large as New Hampshire and Vermont taken together, and has a population two-thirds as great. In the northern part are rich coal deposits. The province has many fine natural harbors. Shipbuilding and the fisheries are the great industries. Most of the Canadian export of fish is from Nova Scotia. The only large town is *Halifax,* the capital, which is about the size of Erie. As a seaport it ranks third in the Dominion, being seldom closed by ice. Halifax is a trading rather than a manufacturing city, but does some sugar-refining and cotton-spinning. The harbor is defended by forts, and the town is garrisoned by British troops.

(b) **Prince Edward Island** is the smallest of the Canadian provinces, being about as large as Delaware, though little more than half as densely peopled. It is situated between New Brunswick and Nova Scotia, south of the Gulf of St. Lawrence. *Charlottetown,* on a commodious bay of the south coast, is the capital. Some wooden shipbuilding is done here; and grain, potatoes, and fish are exported.

(c) **New Brunswick** adjoins Maine on the east. It is about half as large as Illinois, and is thinly inhabited. This province has a great forest area, similar to that of Maine, and is, like that state, busily engaged in lumbering, shipbuilding, and the fisheries. *Fredericton,* the capital, is a small town on the St. John River, about ninety miles from its mouth. It is a center of the lumbering business. The largest place, *St. John,* has a fine harbor on the Bay of Fundy, at the mouth of the same river. This harbor is never closed by ice, and in foreign commerce, St. John ranks next to Halifax among Canadian seaports.

(d) **Quebec** is a province of vast area, most of which is a wilderness. It occupies the basin of the St. Lawrence throughout most of the lower course of that river. Pine lumber and ship timber are the chief natural products. The population, a million and a half in number, are mostly of French descent, and live near the St. Lawrence and in the region between that river and the New England boundary. A very large proportion of the Canadians now settled in the United States have come from this province.

Montreal, somewhat larger than Detroit, is the metropolis of the Dominion, and is situated on an island in the St. Lawrence at the point where the Ottawa River flows into it, and about twenty miles north of the New York boundary. The river is navigable to this point for ocean steamships, and Montreal has a larger foreign trade than any other Canadian port. The St. Lawrence rapids, just above the city, are avoided by means of the Lachine Canal, and this canal furnishes water-power for the factory industries of the city. The river front is lined for more than a mile with fine docks and wharves. *Quebec*, the capital of the colony, is situated on the St. Lawrence, near the head of its estuary. The town is about as large as Grand Rapids, and the only business of importance is the export of timber.

(e) **Ontario** is about as large as the province of Quebec. The northern half is a wilderness. The population of two millions occupies the peninsula between the states of New York and Michigan. In climate, soil, and surface features, this colony is not much unlike the states which it adjoins. *Toronto*, on a fine harbor of the northern shore of Lake Ontario, is the capital and chief city of this province. It has a population about equal to that of Newark. *Hamilton*, at the western extremity of the same lake, and *Kingston*, at the point where the St. Lawrence River begins, have a busy lake trade. *Ottawa*, the seat of the Dominion government, is about as large as Utica. It is situated on the Ottawa River, about 100 miles west of Montreal. Like many other river towns of the Dominion, its principal business is the handling of timber and lumber.

(f) **Manitoba** is a thinly peopled province, twice as large as Maine. The fertile lands of the Red River basin are well suited to wheat-raising, and wheat is the principal product. *Winnipeg*, near the lake of the same name, is the capital and chief town, being about as large as Sacramento. It is a station on the Canadian Pacific Railway, and has communication, by river and railway, with the adjoining states of North Dakota and Minnesota.

(g) **British Columbia** is the name given to a vast western area having a few small towns in its southwestern part. The total population is less than 100,000. Excellent coal is mined on Vancouver Island. There are extensive forests, and the cod and salmon fisheries are yearly increasing in value. *Victoria*, the capital, is a small town at the southeastern extremity of Vancouver Island. The fine harbor is a British naval station, and the headquarters of the Pacific fishing-fleet of the Dominion. *Vancouver*, on the mainland opposite Victoria, is the western terminus of the Canadian Pacific Railway.

II. **Newfoundland**, a great island east of the Gulf of St. Lawrence, is a separate British colony. The coast is rugged, and the interior barren and marshy. The area is about equal to that of Ohio. The only very valuable export is cod from the **fisheries**. Food and clothing are imported in exchange. Nine-tenths of the commerce is with Great Britain and Canada. The **population** is less than 200,000, nearly all of it settled in the southeastern peninsula. Here are five or six towns and villages, of which *St. John's*, the largest, is the colonial capital.

Scene in the Diamond Mines, Kimberly

III. Cape Colony, so named from its situation, includes all of the country between Orange River and the southern extremity of Africa. The **area** is somewhat less than that of Texas. The **population** is 1,500,000, of whom only one-fourth are of European origin. The **climate** is temperate, the **surface** elevated, and the rainfall is confined to the coast country. **Coal, iron,** and **copper** are mined. There are no navigable rivers. Diamond-mining and sheep-farming are the industries of greatest importance, and accordingly **diamonds** and **wool** are the only exports of very great value. Angora hair, ostrich feathers, hides, and skins are other products of this colony. The imports are **cotton and woolen goods.** Nearly all the foreign trade is with the United Kingdom.

The export of diamonds in 1890 had a value of $20,000,000. The diamond mines are at and near *Kimberly*, in the far North. There are several flourishing towns on and near the southern coast. *Cape Town*, the capital of the colony, a place about as large as Los Angeles, lies at the head of Table Bay, about twenty miles north of the Cape of Good Hope. The harbor has a fine breakwater and dock system. The laboring class consists of negroes and Malays. Cape Town is a much frequented port of call. Wool and copper are exported from this point. *Port Elizabeth*, on Algoa Bay, two hundred miles east of Cape Town, is, however, the principal seaport of the colony.

IV. Australia, the great island continent of the Southern Hemisphere, is nearly as large as the United States without Alaska. Most of the area is an arid wilderness. The **population** of nearly three millions live in the southeastern third, where the surface is somewhat uneven, and where are several long, shallow rivers.

The country is divided politically into five colonies, — Victoria, New South Wales, Queensland, South Australia, and Western Australia. Nine-tenths of the trade of these colonies are with one another and the mother country. **Gold**, which led to the settlement of this continent, is still mined in most of the colonies, and sheep-farming is everywhere followed with the best results. **Wool** is, in fact, the great staple product of all this part of the world. In the three or four coast cities, some of this product is manufactured, but woolen goods are still a valuable import from Great Britain.

(a) **Victoria**, in the southeast, the smallest of the colonies, is somewhat larger than Minnesota. The population, of more than a million, is almost wholly of European descent. Wheat is the staple field crop. Sheep-farming is the leading occupation, and gold to the annual value of $10,000,000 is mined in this colony. The principal imports from Great Britain are cotton and woolen goods, machinery, and iron. The only great city is *Melbourne*, the capital. It is about as large as St. Louis, and is situated on a fine bay of the south coast. This port has railway communication with the other Australian cities.

(b) **New South Wales** adjoins Victoria on the north, and has a long coast line on the eastern seaboard. It is four times as large as Victoria, and has a population of about the same numbers. Wool-growing, stock-farming, and the culture of wheat, Indian corn, and oranges are the great agricultural occupations. Gold, silver, copper, tin, and coal are mined in the colony. The principal exports are wool and tin. Clothing and textile fabrics, iron and iron manufactures, are imported from Great Britain.

There is but one large city in New South Wales, — *Sydney*, the capital. It is somewhat smaller than Baltimore. The fine harbor is the principal station of the British Australasian fleet.

(c) **Queensland** occupies the whole northeastern part of Australia. The population of 400,000 is settled along the eastern coast plain. Half the area is forest covered. Sheep-farming, cattle-raising, the culture of maize and sugar-cane, and the mining of gold and tin are the main occupations. The exports of Queensland go to market by way of Sydney and Melbourne. The great items are wool, gold, and sugar. Breadstuffs and clothing are imported in exchange.

One-fourth of the colony's population lives in and near *Brisbane*, the capital, a city of the size of Denver. It is situated on Brisbane River, twenty-five miles from the sea, and has railway and steamship communication with the colonies south of it.

(d) **South Australia**, to which the district called North Australia is colonially attached, occupies the middle of the continent from north to south. The population of the whole area is even less than that of Queensland. Some copper is mined. Wool is the staple export.

Adelaide, about as large as St. Paul, is the capital, and the only port on the south coast of this colony. From this place a telegraph line extends across the continent, 2000 miles through the wilderness, to *Port Darwin* on the north coast, where it connects with the British cable to Singapore, and thence westward to London. (See *Maps*, pages 16 and 140.)

(e) **Western Australia** comprises all of the continent that is west of the meridian of 129° E. The area is 1,000,000 square miles; the population numbers only 50,000, all of whom are settled in the southwestern corner of the colony. In the order of their value the products of Western Australia are wool and skins, gold, timber, sandal-wood, pearl-shell, and pearls. *Perth*, the capital, is a small town on the west coast. *Albany*, the chief port, is in the extreme south. There is telegraphic communication with Adelaide, in South Australia.

V. **Tasmania** is an island colony off the southeast coast of Australia. It is about as large as West Virginia, and has a population of 150,000. The inhabitants are all of European origin, the native race being extinct. The surface is rugged, but **wheat** and **oats** are cultivated in the many valleys. As in the Australian colonies, sheep-farming is largely followed, and the chief export of Tasmania is **wool**. **Tin** is the most valuable mineral product.

There are but two considerable towns, both seaports. *Launceston*, in the north, is connected by railway with Hobart, the principal port. *Hobart*, the capital, is as large as Little Rock.

VI. New Zealand is situated 1200 miles to the southeast of the Australian continent. The colony consists of several islands, only two of which, North Island and South Island, are large. The area of the group is about equal to that of Colorado. The **population** numbers 600,000, of whom 40,000 are natives, called Maoris. North Island has a high and uneven surface, and considerable **forests**. Mountains cover the greater part of South Island. Both islands contain admirable pasture lands. There are 18,000,000 sheep in New Zealand, and the great exports, mostly to London, are **wool** to the value of $20,000,000, and refrigerated **mutton** to the value of $9,000,000, yearly.

Phormium, known in trade as New Zealand "flax" or "hemp," is increasingly cultivated. The yearly crop is worth about $2,000,000. One-fifth of the product is shipped to New York and San Francisco. This fiber is mixed with Manila hemp in rope-making, and is also used for the bands or twine of self-binding reaping machines. Good coal is mined in South Island, but the product is small.

Wellington, the capital, about as large as Topeka, is situated in North Island, and is the chief town. *Auckland*, on the same island, is the principal seaport. *Dunedin*, *Lyttelton*, and *Bluff Harbor*, all in South Island, are the only other ports of much consequence.

III. SUBJECT COUNTRIES. — These are countries inhabited by races native to them, but governed by a small British population of resident merchants, officials, and troops. Such possessions are sometimes called "dependencies," or "protectorates." The profits which result from control of their industries and trade far exceed the cost of keeping possession of such countries. India and Egypt are the principal British possessions of this class.

I. India, or the "Indian Empire," as it is styled, consists of the great peninsula south of the Himalaya range, together with the coast country east of the Bay of Bengal. Its area is about one-fourth as large as that of the United States; its population is four times as great. The British residents are only 100,000 in number.

Elephant piling Timber

The peninsula of India is a rough triangle in shape, having the Arabian Sea on the west, and the Bay of Bengal on the east. The broad **northern half** of the country is a plain of great fertility. It is watered in the east by the Brahmaputra and Ganges rivers, and in the west by the Indus, from whose name that of the people, Hindoos, and that of the country, Hindostan, or India, are derived. The northern plain yields two harvests in the year. The chief **food crops** are wheat, barley, Indian corn, millet, various pulses or pod crops, and rice. **Rice** requires much moisture for its cultivation, and is raised chiefly in the great river valleys and along the western coast. Contrary to the generally received opinion, this grain is the principal diet of only a small proportion of the total population. The Hindoos depend for most of their food-supply on the seed crops, especially **millet**, that do not require a heavy rainfall. The **tea** plant is reared in Assam, the northeastern province; the **poppy**, in many parts of the Ganges valley; and **jute** is cultivated throughout the vast delta of the same river. In the northwest **cotton, indigo, sugar,** and **oil-seeds** are extensively grown.

Elephants at Work in a Lumber Yard, India

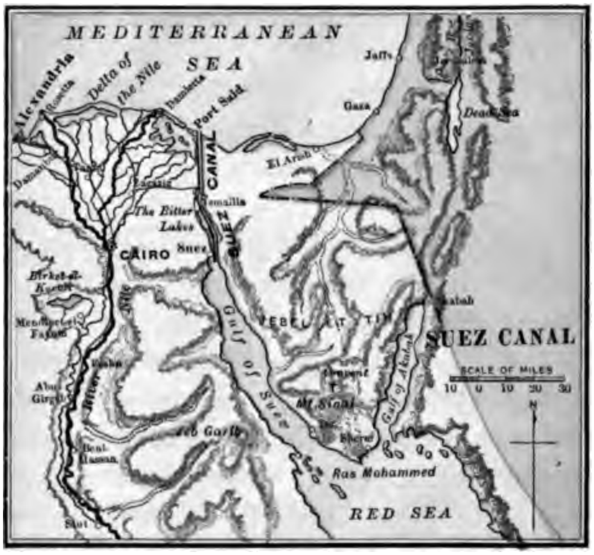
The **southern half** of the country is a three-sided upland plateau called the Deccan, having a coast plain on both east and west. The soil of this upland is fertile, but liable to drought. Water stored in tanks and reservoirs during the rainy season is used throughout the rest of the year. **Cotton, dyestuffs,** and **spices** are raised for export, and various small grains for food. The mineral wealth of India is almost wholly confined to the Deccan. The northeastern third of this triangular plateau contains rich **coal** deposits. There are eighty collieries, having a yearly output of 2,000,000 tons.

British India is divided into numerous provinces. Important among these are Bengal, Lower Burmah, Bombay, and Madras. **Bengal** includes the lower basin of the Ganges River. *Calcutta*, the capital of the province and of the Indian Empire, is situated on the Hoogly River, a branch of the Ganges, eighty-six miles from its mouth. It is about as large as Brooklyn. There are extensive manufactures of jute and of the coarser cotton fabrics. The exports include these products, besides tea and opium, to a great annual value. **Burmah** is a province on the eastern coast of the Bay of Bengal. Rice and teak-wood are exported at *Rangoon*. This is the chief port. It is about as large as Newark, and is situated near the delta of the Irrawaddy River. **Bombay** is a "presidency" of the west coast. The city of *Bombay* has the best harbor in India, and excellent railway connections with the interior. It is the second city of India, having a population nearly equal to that of Calcutta. Cotton manufacturing is the chief local industry, ninety mills being engaged in it. **Madras** is a province in the southeastern part of the peninsula. The city of *Madras*, its capital, ranks as the third seaport of the Indian Empire.

Besides these seaports there are scores of large **inland cities** in the peninsula. Near *Patna* and *Benares*, in the Ganges valley, is the principal region of poppy culture. *Lucknow*, *Hyderabad*, and *Delhi* are other great centers of population. All these cities are connected with one another by an admirable system of railways.

The **sea-borne foreign commerce** of India has a yearly value of about $800,000,000. In 1890 the imports, chiefly from Great Britain, were estimated at $336,000,000. Cotton goods formed nearly one-third of the whole value. The other great items were metals and metal wares, silk goods, and sugar. In the same year, the exports were estimated at $464,000,000. The great items, in the order of value, were: cotton, wheat, rice, opium, jute, tea, hides, and indigo. The rice and opium go mainly to China and the East India Islands. The indigo product is rapidly decreasing in importance.

The **overland trade** with adjoining countries was estimated in 1890 at $32,000,000, and the trade with the United States at $25,000,000. The items of our imports of Indian products are given in Chapters III–VI.



II. Egypt is a vast but ill-defined area of northeastern Africa, which contains the basin of the Nile for about 800 miles above the delta. Nominally it is governed, by a chief ruler called the Khedive, as a dependency of the Turkish Empire, but in reality the British are in possession of the country, and the Khedive governs according to British "advice." The Isthmus of Suez is in Egyptian territory, and since the opening of the Suez Canal the control of this work and its approaches has been necessary to the security of the vast British commerce which uses it.

The foreign commerce of Egypt is mainly with Great Britain. The principal export is **cotton** of fine quality to the yearly value of $40,000,000. The principal imports are **textile manufactures** of one-fourth that value.

Alexandria, in the northwestern part of the Nile delta, is the chief seaport. *Cairo*, at the head of the delta, is the capital and largest city. There are lines of railway connecting the cities of the delta country with one another and with the Suez Canal.

The **Suez Canal** connects the Mediterranean Sea with the Gulf of Suez and thus with the Red Sea. This canal was opened for traffic in 1869, having been ten years constructing at a cost of $100,000,000. The surface of the country through which the canal passes is very low, and, in parts, beneath the level of the sea. These depressions, now filled with water, are the lakes shown upon the map.

The whole length of the canal is 88 miles, of which 66 are canal proper, and 22 are lakes. The depth of the canal is 26 feet, and the width of its floor is 72 feet. Every five or six miles are side basins, where large vessels can moor for the night. The channel through the lakes is marked by iron beacons, set at short intervals from one another. The Suez Canal is, with the exception of the Corinth Canal (see *Greece*), the only great canal in the world built without locks.

At the northern end of the canal is *Port Said*, a great coaling station. Its harbor is artificial, being protected by breakwaters of concrete blocks. The harbor contains three great basins, with piers and warehouses. At the southern extremity of the canal is *Suez*, a much smaller place. About midway of the canal is *Ismailia*, a small railway town. All three of these places owe their existence to the canal. All movements of ships are regulated from these towns by telegraph. Three-quarters of the total shipping using the canal are British.

Harbor at Port Said

Other *subject countries* of Great Britain are:

I. **British Honduras**, a thinly inhabited country of Central America, having about twice the area of the State of Maine. The products are **mahogany, sugar**, and **tropical fruits**. The fruits are marketed at New Orleans. *Belize*, on the only good harbor, contains most of the population of the country.

II. **British Guiana**, situated east of Venezuela, is about as large as the state of Nevada, and has a population of 300,000. The chief products and exports are **sugar** and **gold**. *Georgetown*, at the mouth of Demerara River, is the seat of government.

III. **Jamaica**, the largest of the British West India Islands, is situated 100 miles south of Cuba. It is about twice as large as Delaware, and has a population of 640,000, three-quarters of whom are negroes. The staple products are **sugar, rum, coffee**, and **allspice**. *Kingston*, on the south coast, is the capital and chief seaport. Its population is about equal to that of Savannah.

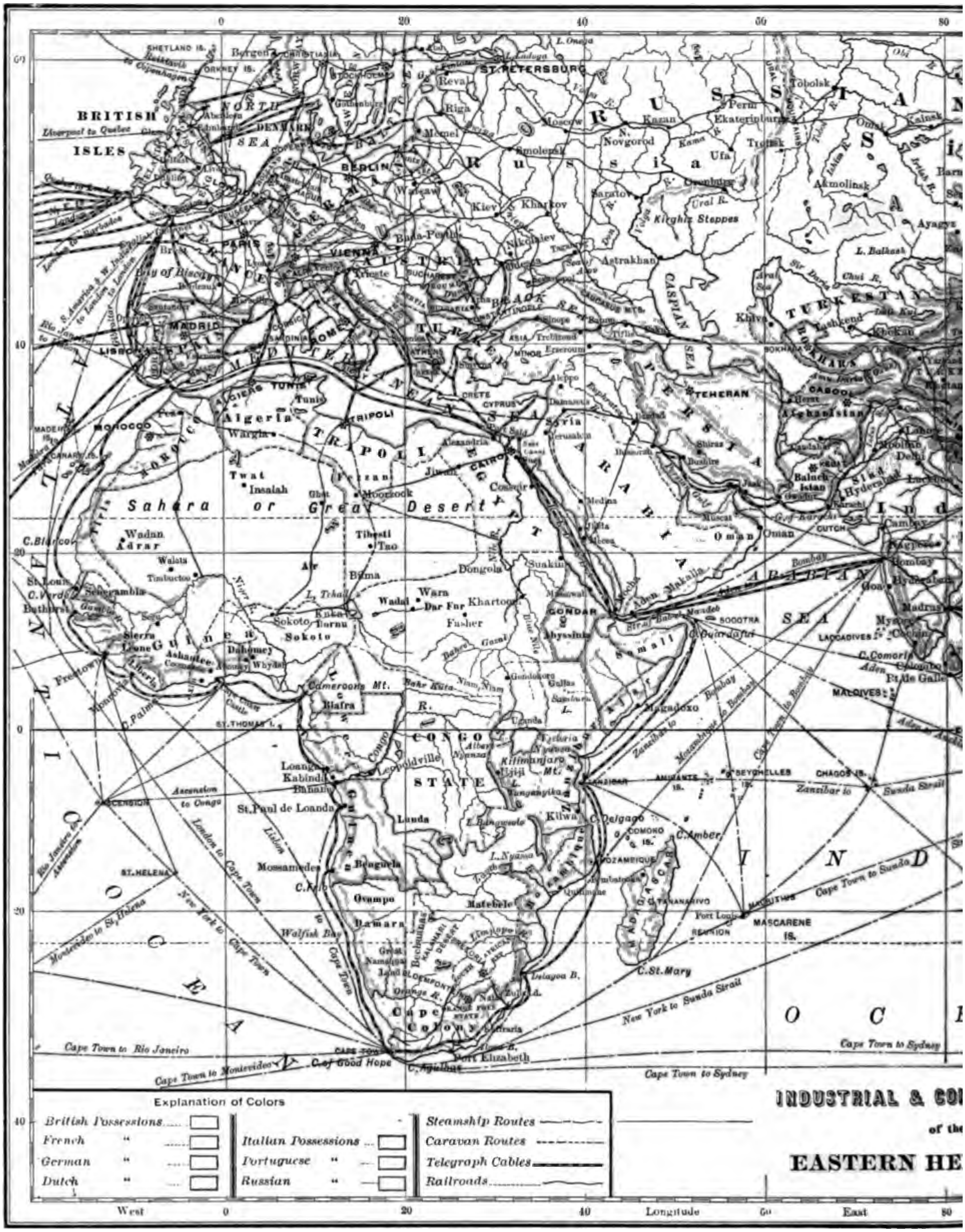
IV. **Trinidad** is an island opposite the delta of the Orinoco. It is somewhat smaller than Delaware, and has a population of 200,000, mostly negroes. The chief exports are **sugar, cocoa**, and **asphalt**.

V. **Natal** is an ill-defined area on the eastern coast of Africa, adjoining Cape Colony. Most of it is grazing country, supplying **hides** and **wool** to the English market. Some **sugar** and **tea** are cultivated near the coast; and **coal** is mined near *Durban*, which is the only port.

VI. **Mauritius** is an island about half as large as the state of Rhode Island, with a population somewhat greater, consisting mostly of negroes, Malays, and Chinese. It is situated about 500 miles east of Madagascar. The island is one great **sugar** plantation. *Port Louis* is the capital.

VII. **The Fiji Islands** are situated about 1000 miles northeast of New Zealand. The islands number several hundreds, but only two of them are large. The group has an area about equal to that of the state of New Jersey. **Sugar** is the staple crop. *Suva* and *Levuka* are the only settlements of consequence.

VIII **Ceylon** is a great island southeast of the peninsula of India, from which it is separated by a shallow strait. It is about as large as West Virginia, and has a population four times as great. **Tea, coffee, cinchona**, and **cinnamon** are the staple products and exports. Plumbago, or **graphite**, is mined in large quantities. The foreign trade is with other Indian ports and Great Britain. Rice and cotton goods are the chief imports. *Colombo*, a city about as large as Providence, situated on the west coast, is the capital. *Trincomali*, a small town on a fine harbor of the east coast, is a station of the British East India Squadron.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Aleppo
Damascus
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CYPRUS
Syria
Jerusalem
TEHERAN
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Baluchistan
Karachi
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C. Delgado
COMORO IS.
C. Amber
MOZAMBIQUE
Quilimane
MADAGASCAR
TANANARIVO
Mossamedes
Benguela
Ovampo
Damara
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Great Namaqua Land
Bechuana
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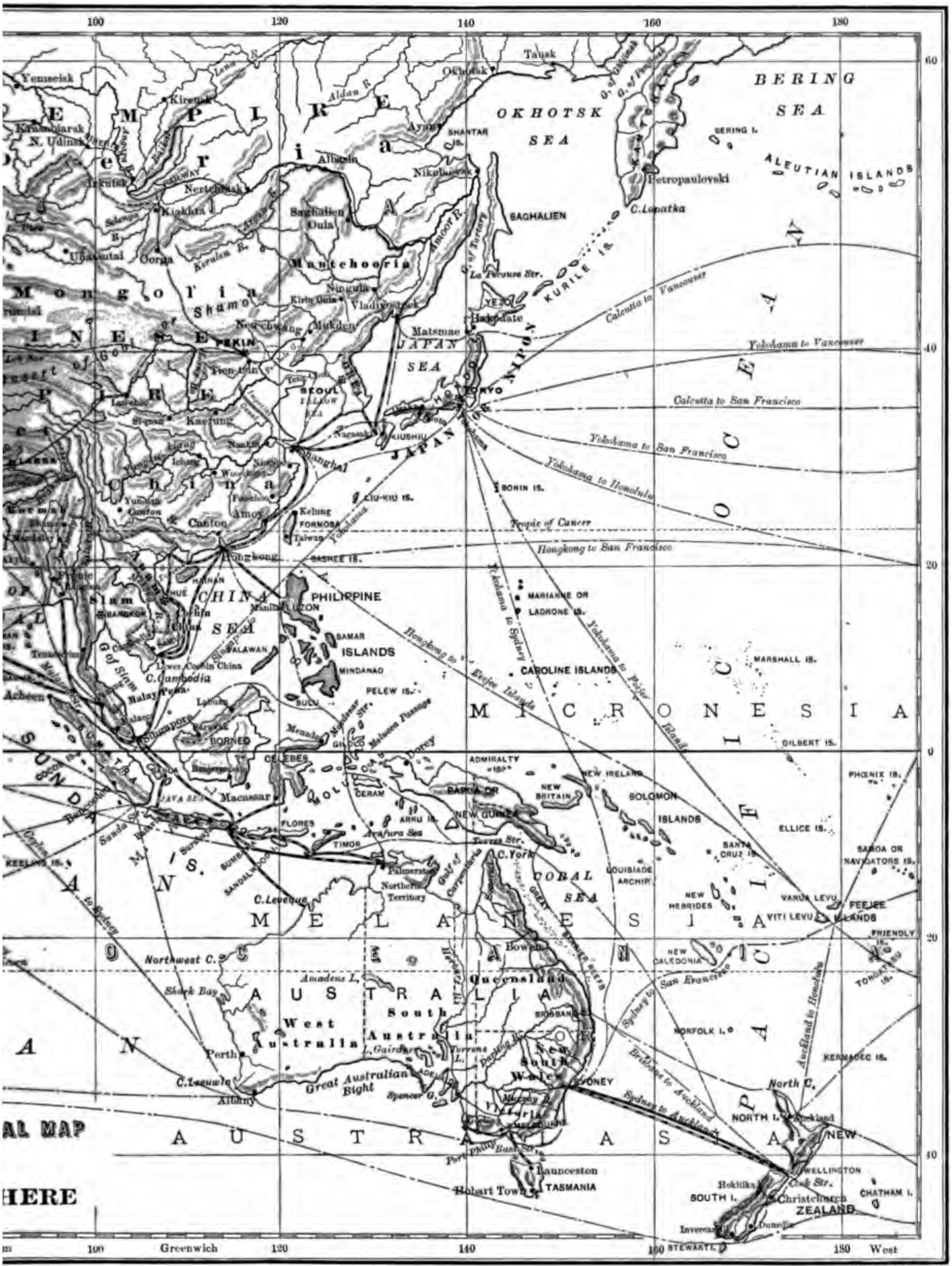


R.D. Servoss, Eng'r, N.Y.

CHAPTER IX

GERMANY, FRANCE, SPAIN

THE total value of our exchanges of merchandise with foreign countries — that is, the sum of our sales to and purchases from other commercial nations — is about 1500 millions of dollars annually. Nearly half of all this trade is with the United Kingdom and British dependencies.

Of the remainder of our foreign exchanges, more than half — that is, more than one-fourth of all our international trade — is with Germany, France, and Spain, and their possessions, named in the order of the value of their dealings with the United States.

With the dependencies of Germany and France, our commerce is of little consequence; while four-fifths of our Spanish trade, until the recent war, was with the former colonies of Spain, — Cuba, Porto Rico, and the Philippine Islands.

I. GERMANY. — Germany, a country of western Europe, lies between the Alpine ranges and the North and Baltic seas. Russia is east of it; France and the Lowlands are west of it.

German and *Germany* are words that have come into English speech by derivation from the Latin, and that are not used by the Germans themselves.

Germany has an **area** about three times as large as that of New England, and a **population** which, in 1890, was ten times as great.

The **government** is a constitutional monarchy. The various states of Germany united in 1871 to form the German Empire (*Deutsches Reich*). There are two legislative houses, one having a small number of members appointed by the states, the other consisting of many representatives chosen by universal suffrage. No measure can become a law unless adopted by both these houses, and the emperor (Ger. *Kaiser;* Lat. *Cæsar*) has no power of veto upon such laws. As is the case with the other great powers of the continent, Germany maintains a vast standing army, to equip and support which imposes the heaviest burdens upon the productive classes of the population.

Though situated for the most part in higher latitudes than the United States, the **climate** of Germany is not greatly unlike that of the northern section of our Union. North Germany is generally a level plain; in the southern part are high plateaus rising gradually to the Alps. The **soil** of the country is nowhere very fertile, but the agricultural areas are well cultivated.

The cereals of northern latitudes — wheat, rye, oats, and barley — are raised in all parts of Germany. **Rye** is the bread-grain of the poor. **The potato** is extensively grown in the eastern part of the empire, where it is used not only for food but in the distillation of spirits. Under the stimulating influence of a government bounty the **sugar-beet** is largely cultivated. There are now more than 300 factories engaged in the manufacture of beet-sugar. More **hops** are raised than in any other country in the world. **Flax** and **tobacco** are crops of great aggregate value. The culture of **the vine** is almost wholly confined to southern and western Germany, where it is especially prosperous in the Rhine valley. As is the case with other densely peopled countries of Europe, the agricultural products of Germany are consumed at home, and not exported.

Horses, cattle, sheep, and **swine** are raised in vast numbers. Some sheep are sold abroad, though the demand for wool is not covered by home production. So, also, some sausages and hams are exported, but the imports of American pork have a much greater value.

There are few **minerals** that are not found in Germany. The staple products of the mines are coal, iron, zinc, copper, lead, silver, and salt. Of silver, zinc, and copper, Germany yields more than any other European country.

Forests cover about one-fourth of the whole empire, and the most careful attention is paid to forestry. The northwestern part is almost destitute of woods, but the mountainous regions of the south are in the main covered with timber. In the southwest is the famous Black Forest, from which great rafts of timber are floated down the Rhine every year.

The principal **manufactures** of the empire are textile fabrics, iron and steel products, sugar, beer, woodenware, glass and glassware, and porcelain and earthenware. The textiles include cottons, woolens, silks, and linens. The chief seats of iron manufacture are in the northwest (West Prussia), where the population is densest, and where coal is extensively mined. In particular, the town of Essen is famous for the great steel works of Krupp & Co. Here most of the artillery of Europe is made, besides steel rails, machinery, and hardware of every description.

The Krupp Exhibit at the Chicago Fair

The railways, rivers, and canals of Germany afford an excellent system of **internal trade routes.**

Of the 25,000 miles of **railway**, all but a fraction is owned by the states or the empire. No other country of Europe has so extensive a system of railways.

Five large **rivers** traverse Germany in a general northerly direction from the Alps to the seaboard. The Vistula and the Oder pour their waters into the Baltic; the Elbe, the Weser, and the Rhine flow into the North Sea. All of these rivers are navigable, the Rhine and the Oder for long distances. The Danube has its headwaters in the Black Forest. Though by far the most important river that rises in the European Highland, the Danube, in its course across South Germany, is too shallow to be navigable for any but flat-bottomed boats.

Compared with the **canal-system** of France or of the Lowlands, that of Germany is not very extensive. The canals that connect the Rhine with the Danube, the Elbe with the Oder, and the Oder with the Vistula are the most important. Several short canals connect the River Spree (*see* Berlin) with the other rivers of North Germany. A great ship-canal across the foot of the Jutland peninsula is now approaching completion. By connecting the Baltic with the North Sea it will save the voyage round the north of Denmark. This canal will be sixty miles long, from the Bay of Kiel to a point near the mouth of the Elbe.

There will be huge locks at both ends of the canal, as the mean water-level of the North Sea is somewhat higher than that of the Baltic. The navigable width of this waterway will be 120 feet, and its depth 28 feet. The time of passage through the canal is to be about thirteen hours, and the time saved to steamships running between Kiel and Hamburg is estimated at twenty-four hours. Russia pays one-third, and Germany two-thirds, of the cost of this great work.

The greater part of the **foreign commerce** of Germany is with the adjoining continental countries, Great Britain, and the United States. In 1890 Germany exported to the United States merchandise to the value of $99,000,000. The great items were textile fabrics, iron and steel manufactures, drugs and chemicals, leather goods, and glass and glassware. In the same year Germany imported from the United States merchandise to the value of $86,000,000, of which the chief items were cotton, kerosene, beef and pork products, and tobacco.

Berlin, the capital, is about as large as New York City. It is situated on the Spree, a broad, sluggish stream, which is here crossed by fifty bridges. Though but a small town two centuries ago, it now ranks third in population among European cities, being exceeded by London and Paris only. With the exception of St. Petersburg, Berlin is the only great capital in Europe that is of modern growth. The development of the city is due in part to its central situation in the northern plain, but largely to the fact that it is the seat of the Prussian and Imperial governments. There is excellent railway communication with all parts of Germany, as well as with the neighboring countries. The local industries are of great variety. Important items are printing and publishing and the manufacture of steam-engines, locomotives and cars, sewing-machines, brass-ware, and chemicals.

A large share of the **ocean commerce** of the empire is carried on through the ports of adjoining countries. Antwerp and Rotterdam, in particular, participate extensively in it. The chief seaports of Germany itself are Hamburg and Bremen.

Hamburg, the most important commercial city of continental Europe, is situated on the Elbe, sixty miles from the sea. In population it is double the size of Jersey City. *Altona*, a town as large as Rochester, adjoins it on the west, and the two have a wharf frontage of three miles on the river, besides numerous street canals. From this port a vast emigration of Germans and other Europeans has been going on for the last fifty years, mainly to America. There is regular steamship communication with the United States, the West Indies, and South America on both its coasts. The principal imports are coal and iron from other parts of Europe, coffee from Brazil, crude chemicals from Chili and Peru, and grain and petroleum from the United States. The exports include all those of the empire. The manufactures of Hamburg, though secondary in consequence to her commerce, are yet very important. The great items are metal wares of every description, spirits and malt liquors, chemicals, paper, and leather goods.

Bremen, on the Weser, fifty miles from the sea, is a city about as large as Providence. In the days of sailing-ships a numerous merchant fleet hailed from this port, but the river is too shallow to admit modern steamships. Accordingly, *Bremerhaven*, thirty miles nearer the sea, was established as its port about fifty years ago. Bremen is another important port of emigration to the United States. Its ocean trade is principally with Great Britain, the East Indies, and our own country. The chief industries of the city are tobacco manufacture, rice-shelling, and sugar-refining. The place is connected by railway with the wharves of Bremerhaven. The harbor of this lower port is seldom obstructed by ice, and has an excellent system of docks, piers, and dry-docks.

Koenigsberg, in the extreme northeast, is a city as large as Louisville. It controls most of the Baltic trade of Germany. The harbor is sheltered. In the winter it is closed by ice. The great items in the trade of this port are grain, petroleum, tea, flax, and fishery products.

Hanover, on a tributary of the Weser, eighty miles southeast of Bremen, is a place about as large as Minneapolis. Cottons, liquors, and machinery are the main local products. There is a busy trade in leather and wool.

Breslau, on the Oder, 200 miles southeast of Berlin, is as large as Pittsburg and Allegheny taken together. The manufactures include iron and steel products in great variety, zinc wares, woolens, and paper. The industrial fairs held here every year attract visitors from all parts of the empire.

The following are important towns of **South Germany**:

1. **Nuremberg** (Ger. *Nuernberg*), somewhat larger than Omaha, is known the world over for its toys and fancy articles of metal, ivory, and carved wood, called "Nuremberg wares." Faber's lead-pencils, gold and silver wire and foil, and powdered bronze are made here.

2. **Munich** (Ger. *Muenchen*), twice the size of Newark, occupies a lofty site just north of the Bavarian Alps, and on the banks of the "rapid rolling" Isar. It is one of the most famous art centers in the world, possesses in its museums vast scientific and antiquarian collections, and has several libraries, of which one contains more than a million printed volumes. The city is celebrated for its artistic handicrafts, especially glass-staining, bronze-founding, and wood-carving, and for the brewing of Bavarian beer. There is a great trade in grain, beer, and art goods.

3. **Stuttgart,** a city about the size of Nuremberg, is also famous for its museums, libraries, and art galleries. It is an important book-publishing center, and manufactures hosiery, musical instruments, pigments, and chemicals.

The following are the principal towns of **Saxony**:

1. **Leipsic** (Ger. *Leipzig*), about as large as Cincinnati, is next to Hamburg the most important commercial city of Germany. It is celebrated as a literary and musical center. Three great fairs are held here every year, attracting merchants from all parts of Europe, and even from Asia and North Africa. The great staples thus sold are furs, leather, wool, woolen cloths, linen, and glass. Leipsic has a greater trade in books than any other city in the world, and accordingly type-founding, printing, book-binding, and kindred industries are the chief local occupations. Musical and scientific instruments, and chemicals are other important products.

2. **Dresden,** a city somewhat larger than Cleveland, is beautifully situated on the Elbe, a few miles from the Austrian frontier. The city contains many objects of interest, and its artistic, literary, and scientific collections are extensive. The chief industries are brewing, straw-plaiting, and the manufacture of scientific and musical instruments. The so-called "Dresden" china and porcelain are made at the town of *Meissen*, nine miles distant.

3. **Magdeburg,** also on the Elbe, 100 miles below Dresden, is about the size of Milwaukee. Owing to its central situation and its excellent communications by river and rail, Magdeburg is a very important commercial city. The chief local products are refined sugar, textile fabrics, and musical instruments.

4. **Chemnitz,** fifty miles southwest of Dresden, is about half as large as that city. In the manufacture of *cotton goods*, especially hosiery and calicoes, Chemnitz ranks first among German towns. Woolen cloth, steam-engines, and spinning machinery are other valuable products of the place.

The following are important towns of the **Rhine Valley**:

1. **Cologne** (Ger. *Koeln*), twice the size of Rochester, is the most important commercial city on the German Rhine. A considerable share of the exports of the empire, wines and timber in particular, are sent from Cologne down the river to

Rotterdam. Among the many local products are cotton and woolen goods, sugar, soap, and eau-de-*Cologne*.

2. **Frankfort** (Ger. *Frankfurt*), a city about the size of Newark, is situated on the Main, a tributary of the Rhine. It is a literary, artistic, scientific, and commercial center, and ever since the Rothschild family came into prominence here, Frankfort has been one of the chief banking cities of Europe. At the fairs held every spring and fall there is a great trade in leather, books, jewelry, and tapestries.

3. **Duesseldorf**, about half as large as San Francisco, is twenty-five miles down the Rhine from Cologne. Coal and iron are mined in the neighborhood, and the iron town of *Essen*, already referred to, is near by. Duesseldorf is widely known for its manufactures of cotton goods.

4. **Crefeld**, twelve miles northwest of Duesseldorf, is a city about the size of Indianapolis. It is the chief seat of the *silk and velvet manufactures* of Germany.

5. **Elberfeld**, a place about half the size of Buffalo, is famous for its textile manufactures, especially of wool and silk, and for its extensive chemical and dye works. The adjoining town of *Barmen*, nearly as large as Elberfeld, has similar industries, though making a specialty of ribbons and braids. The two are often spoken of as Elberfeld-Barmen.

6. **Aix-la-Chapelle** (Ger. *Aachen*), a town as large as Crefeld, is situated near the meeting-point of the Dutch, Belgian, and German boundaries. It is the chief *woolen manufacturing* town of the empire.

Foreign Dependencies. — Germany has no colonies. Some islands of the West Pacific, and vast undeveloped areas in Africa constitute the foreign possessions of the empire.

From the *Marshall*, *Solomon*, and *Bismarck* islands, and from *Papua*, part of which is a dependency of the empire, Germany derives cabinet woods, sandalwood, cocoanut fiber, cocoanut meat (*copra*), and tortoise shell. The trade has as yet no very great value.

The African possessions of Germany consist of that part

Caravan Conductors and Merchandise, Congo River of the Guinea coast which is called *Togoland*, the country north and west of the Congo State known as *Cameroons*, the region north of Orange River called *German Southwest Africa*, and the vast area east of the Congo State known as *German East Africa*. Along the coasts of these four areas the Germans have trading stations, or "factories," from which they derive dyewoods, palm oil, rubber, ivory, and cacao. For these they barter cottons, spirits, firearms, salt, and hardware. The total exchanges of Germany with her African possessions amounted in 1890 to $2,300,000.

II. FRANCE. — France lies south of England, from which it is separated by the English Channel. On the northeast is Belgium; Germany, Switzerland, and Italy are east of it; the Mediterranean Sea and Spain are south; and the Atlantic is west. The island of Corsica is French territory.

The ancient name of France was Gaul. In the fifth century it was invaded and conquered by the *Franks*, a German tribe, who gave it the name by which it has since been known.

The **area** of France is about twice as large as that of Colorado, and its population is six times as great as that of New York State.

The **government** is a republic. The legislature consists of two houses, the Chamber of Deputies, elected by universal suffrage, and the Senate, elected by delegates from district representative bodies. The President is elected by a majority vote of both houses, sitting together. He holds office for seven years.

The **climate** is generally temperate. In the northern districts it is not unlike that of Germany and Great Britain. On the Mediterranean coast much injury is sometimes done to vegetation by the hot winds which blow from the deserts of Africa. The **soil** of France is very fertile, and three-fourths of the area of the country is fit for cultivation. Wheat, oats, and barley; potatoes, and the sugar-beet are largely produced in the northern districts. The grape is extensively grown in France, and wine forms one of the great staple products. More than five per cent of the surface of the country is covered with vineyards. From its value in connection with the production of silk, the cultivation of the mulberry-tree is a highly important industry, chiefly in the south. Among the other agricultural products are flax, hemp, tobacco, and a great variety of semi-tropical fruits.

The **domestic animals** — horses, mules, cattle, swine, and sheep — are raised in large numbers. The breeding of good horses is much encouraged by government rewards. Bee-culture is a considerable industry.

Compared with other European countries France is not rich in **minerals**. The products of the coal and iron mines of the north and southeast are not sufficient for the factory needs of the country, and large quantities are imported. Silver, gold, copper, and lead are found, but not to such an extent as to make the working of the mines profitable.

The specially notable **manufactures** of France are silks and wines, of which the annual product and export are very great. Lyons, on the Rhone, is the center of the silk industry. France has also numerous and important manufactures of linen, wool, and cotton fabrics; beet-sugar; glass and porcelain; watches and clocks; and iron and steel goods. Havre, on the English Channel, has extensive shipyards.

The river, coast, and ocean **fisheries** yield a large annual return. More than 20,000 boats are employed in the coast fishing. Numerous fleets sail every year from French ports to the Newfoundland banks.

The **railway system** is inferior to that of Germany, but internal communication by water is very extensive. **Canals** connect the principal manufacturing centers, and the great rivers are for the most part navigable. There are more than

13,000 miles of railways. These are worked by companies, but subject to government control.

With the exception of the Rhone the principal **rivers** flow north and northwest from the mountain regions of the east and south in which they take their rise. From the Pyrenees, which divide France from Spain, the Garonne runs into the Atlantic Ocean. The Loire flows west into the Atlantic, and the Seine northwest into the English Channel. The Rhone, the great river of the south, empties its waters into the Mediterranean.

The **foreign commerce** of France is very great. The chief exports are wines, silks, and woolen goods. The trade is mainly with Great Britain, Germany, Spain, the United States, and Switzerland. In 1890 the value of French exports to the United States was $78,000,000, and in the same year France imported from the United States goods to the value of $50,000,000. The exports to us were chiefly fabrics of silk, wool, and linen; wines and brandies; and wares of gold, silver, glass, and porcelain. The imports from the United States were mainly cotton, grain, animal products, petroleum, copper, tobacco, lumber, agricultural implements, and iron and steel goods.

Paris, the capital, is, next to London, the largest and richest city in the world. It is situated on the Seine, about 100 miles from the mouth of that river. Paris is the social and fashion center of Europe. It is noted for the number and magnificence of its public buildings and for the artistic beauty of its manufactures of gold, silver, pottery, porcelain, tapestry, and dress fabrics of every description. Paris is a little more than twice as large as Philadelphia.

Havre, on the English Channel, at the mouth of the Seine, is the port of Paris. Next to Marseilles it is the greatest commercial seaport of France. It is about as large as New Haven. Most of the extensive export and import trade between France and the United States passes through Havre. Having direct railway communication with Strasburg on the Rhine, Havre is also the transit port for a large part of our trade with Germany. Its numerous industries include sugar-refining and manufactures of cotton, tobacco, and iron.

Rouen, on the Seine about seventy miles inland, is one of the chief manufacturing cities of France. It is as large as Allegheny. It is the center of the cotton industry of the north. Besides cotton goods in great variety, the manufactures include fabrics of silk, wool, and linen; steel goods, machinery, and chemicals. The Seine is navigable to Rouen, and the city is an important shipbuilding center.

Bordeaux, the most important French port on the Atlantic coast, is sixty miles from the mouth of the Garonne. The city is nearly as large as Washington. Its export trade is chiefly in wines and brandies. The district is famed for the production of red wines, and is the greatest wine market of France. It is connected with the Mediterranean by a canal through which it supplies the southern districts with products imported from the United States, South America, and Great Britain. Bordeaux does considerable shipbuilding, and manufactures woolen goods and calicoes.

Lyons, the second city of France in population and the first in manufactures, is situated at the confluence of the Saone and the Rhone, 150 miles from the Mediterranean. It is about as large as San Francisco. It is the center of the greatest silk-producing district in the world. In manufactures and trade in this product and its various fabrics, especially satins, velvets, and ribbons, it stands without a rival. The annual value of the industry exceeds $80,000,000.

In recent years the export of silks from France to America has considerably decreased, owing to the development of silk-manufacture in the United States. Twenty years ago our purchases of silk from France exceeded $20,000,000 per annum. Our purchases from France now have less than half that value, although the consumption of silk in the United States has largely increased. Much of our raw silk now comes from Japan.

Marseilles is the third city in population and the first in foreign commerce. It is situated on the Mediterranean coast, and is about as large as Pittsburg. It has an immense shipping trade, chiefly with ports on the Mediterranean and, by way of the Suez Canal, with important commercial centers in India, China, and Japan. Marseilles has great iron shipyards, and smelting works for reducing ores from Algeria, and manufactures marine engines, soap, sugar, and chemicals.

Nantes, a city about as large as Trenton, is situated thirty miles from the mouth of the Loire. It has a considerable export and import trade, and manufactures cotton, woolen, and linen fabrics, and wares of copper, lead, and iron.

Brest, a port in the extreme northwest, is a strongly fortified city, and one of the principal naval stations of France. It is about half as large as Providence. Shipbuilding for the navy is the chief industry. Brest is connected with the United States by a submarine cable.

Nancy, on the Meurthe, near the German frontier, has manufactures of cambric and muslin. It is as large as Kansas City.

Rheims, 100 miles northeast of Paris, on the railway from that city to Strasburg, is the chief depot and market for the famous champagne wines which are made in the district. It is also a center of manufactures of silk and wool. It is about as large as Richmond.

Lisle, near the Belgian frontier, is one of the greatest linen manufacturing cities in Europe. Laces, gloves, and hosiery are also important products. The city is as large as Rochester.

Calais and **Boulogne**, on the English Channel, about nineteen miles from each other, are notable chiefly as ports of passage for travelers to and from the United Kingdom. Steamers ply daily between Boulogne and London, and between Calais and Dover.

Toulouse, an inland city in the south, situated on the Garonne, has manufactures of woolens, silks, leather, tobacco, and brandy. There are also cannon foundries. The place is somewhat larger than Albany.

Toulon, on the Mediterranean coast, is chiefly remarkable as the great naval arsenal of France.

The **foreign dependencies** of France contribute but little to the business life of the world.

Algeria, in North Africa, on the Mediterranean coast, is somewhat larger than California, and has a population of about four millions, the vast majority of whom are of the native African races. The country is rich in mines of iron, copper, and lead, but these have not been very much worked. Agriculture and sheep-raising are the chief industries. The exports and imports, which are not of great value, are mostly to and from France.

Senegambia and **Guinea** are extensive regions on the west coast of Africa. French Senegambia is about as large as Vermont, and French Guinea about as large as Massachusetts. The products are mainly indigo, pepper, sugar, palm oil, and tobacco.

Madagascar, an island in the Indian Ocean, southeast of Africa, has a population estimated variously from one and one-half to two and one-half millions. It is nearly as large as Texas. It exports cattle, hides, and rubber. There are iron deposits in the island, but they are poorly worked. Rice, cotton, spices, and sugar are among the other products. The chief seaport is *Tamatave*. **Reunion**, a small island 400 miles east of Madagascar, produces and exports sugar, cocoa, coffee, and spices.

Cochin-China, or **Anam**, is an extensive region of the Indo-Chinese peninsula of Southern Asia. The French possessions here are about half the size of New York State. The leading product is rice, and the trade is mostly with China. Cotton and pepper are also exported. *Saigon*, the colonial capital, is a place of much commercial importance.

New Caledonia, in the South Pacific, is a French penal colony. It exports silver, lead, and nickel, and preserved meats to France. The Loyalty Islands and the Marquesas Islands are of no importance commercially.

Martinique and **Guadaloupe**, in the Lesser Antilles (West India Islands), have a considerable export and import trade with France. Their products are chiefly sugar, cocoa, coffee, spices, tobacco, cotton, and rice.

French Guiana, on the north coast of South America, produces sugar, coffee, cocoa, and various spices, which go mainly to France. The town of *Cayenne* is the colonial capital.

III. SPAIN. — Spain, with Portugal, forms the large peninsula in which the European continent terminates at the southwest. Spain lies between the Mediterranean Sea on the east and Portugal on the west, and on the north it is separated from France by the Pyrenees Mountains, and the Bay of Biscay completes the northern boundary.

Iberia was one of the ancient names of Spain, hence the designation "Iberian" which is sometimes given to this peninsula.

The **area** of Spain is about four times that of Louisiana, and its **population** is somewhat more than one-fourth that of the United States.

The **government** is a constitutional monarchy. The legislature, called the Cortes, has two houses, — the Senate and Congress, — the latter elected by the people, and the former composed partly of life members appointed by the king, and partly by members chosen by provincial bodies. Cuba, formerly the most important colony of Spain, when under Spanish rule, had the privilege of representation in the Cortes.

The **climate** is as diversified as is the physical aspect of the country. There are seven mountain ranges or ridges (Spanish, *Cordilleras*) extending generally in an easterly and westerly direction. The northern districts, exposed to cold winds from the snow-crowned Pyrenees, have long winters and much rain in spring and autumn. In the valleys of the southern sierras and the plains of the Mediterranean and Atlantic coasts, spring and autumn are delightful seasons. The winter is mild, and the summer tropical. In the interior districts, which form an elevated plateau covering half the area of the kingdom, there are extremes of heat and cold.

The **soil**, where capable of cultivation, is generally fertile. In the north wheat, barley, and rye are plentifully produced, and timber is abundant. The cork-oak is cultivated in the Mediterranean coast country. Grain and wine are the chief products of the central region. In the south the vegetable products include cotton, rice, and sugar; oranges, lemons, dates, and a great variety of other fruits. Flax, hemp, and the mulberry-tree are cultivated in many districts. The great majority of the people are engaged in agriculture, and vine-culture is the leading field industry.

The beasts of draught and burden are mostly mules and donkeys. Horses are not much used in Spain. Sheep-raising has for centuries received much attention, and wool is an important article of export. Cattle, swine, and goats are also raised in large numbers.

The **mineral resources** of Spain are very considerable. There are deposits of iron, lead, copper, quicksilver, and tin. The principal iron mines are in the north. Large quantities of iron ore of fine quality are exported from Bilbao, on the northern coast. Almaden, in the south-central part, has the richest quicksilver mines in the world, except those at New Almaden in California. The Almaden deposits were known and worked by the ancient Romans. In recent years they have been operated by the wealthy banking firm of Rothschild.

In **manufactures** the country is backward. Most of the output of the mines is exported as raw material. There are cotton and silk factories at Barcelona, on the Mediterranean. Woolen and linen goods are also manufactured, but there is no export trade in these products. The cutting and preparation of cork form an important industry in the province of Gerona on the Mediterranean coast. Toledo, famous for centuries for its sword-blades, has still some manufactures of steel. Vine-culture being, as we have seen, the leading agricultural pursuit, so wine-making is the chief manufacturing industry, and wine takes the lead among the exports of the kingdom.

There are 6000 miles of **railways**, all worked by private companies, but largely supported by government guarantees. Owing to the mountainous nature of the country there are but few **canals**, and the rivers are navigable only for flat-bottomed boats. In the interior the carriage of merchandise is mostly by draught-animals.

The principal **rivers** take the direction of the mountain chains which cross the country from east to west. The Ebro, rising in the Cantabrian range, flows southeast into the Mediterranean. The rivers flowing west and southwest — the Douro, the Tagus, the Guadiana, and the Guadalquivir — discharge their waters into the Atlantic, the Douro and the Tagus traversing Portugal.

Much the greater part of the **foreign commerce** of Spain is with France and Great Britain. Nearly three-fourths of Spanish trade with the United States has been through her former colonies, particularly Cuba. Our exports to the kingdom in 1890 had a value of $13,000,000, the chief items being cotton, tobacco, lumber, petroleum, and food products. Our purchases from Spain in the same year amounted in value to $5,000,000, consisting mainly of fruits, wine, iron ore, and cork. The value of our exchanges, in the same year, with the colonies of Spain exceeded $80,000,000.

Though situated between two great highways of commerce, the Atlantic and the Mediterranean, and having many excellent seaports, Spain has not a large *mercantile marine*. More than half the vessels trading to her ports sail under foreign flags.

Madrid, the capital, is a city about as large as Boston. It is situated in the inland province of the same name, and on a tributary of the Tagus. Commercially it is of little importance, and it has hardly any manufacturing industries. The artisans and merchants of the city are supported mainly by the patronage of the royal court and of the great numbers of officials connected with the government.

Barcelona, on the Mediterranean coast, is the principal seaport. It is the second city in population, being twice as large as Rochester. It manufactures and exports silk, woolen, and cotton goods, and firearms. Barcelona is famous as the place where Ferdinand and Isabella received Columbus on his return to Spain after the discovery of America.

Valencia, on the Mediterranean coast, is an important seaport, somewhat larger than Minneapolis. It has manufactures of silk, wool, glass, and tobacco, besides floor-tiles and hemp goods. Valencia is the fashionable watering place for Madrid, with which it is connected by railway.

Malaga, on the south coast, is situated in a district famed for the production of raisins, and the sweet wine known as Muscatel. A large share of the raisins exported comes to the United States. The city is about as large as St. Paul.

Cadiz, in the southern part, on the Atlantic coast, has a considerable export trade in wines, fruits, and olive-oil. There are glass-works and soap factories at this place. Cadiz is a little larger than Troy.

Seville, one of the most beautiful cities of Spain, is about as large as Omaha. It is situated ninety miles inland, on the Guadalquivir. Iron wares, firearms, and porcelain are made here.

The following islands, until the Spanish-American war of 1898, were important **colonial dependencies** of Spain: Cuba and Porto Rico in the West Indies, and the Philippine Islands in the East Indies.

(a) **Cuba**, the largest island of the West Indies, is situated at the entrance to the Gulf of Mexico. In area it is about equal to the State of New York, and in population to New York City. The **climate** is tropical in the coast districts, which are low and flat. In the interior the country is mountainous and the temperature cooler.

The **soil** in the cultivated districts is fertile and the vegetation luxuriant. A considerable part of the island is under forest, a still larger part is an unreclaimed waste, while only about one-tenth of the area is cultivated. The great staple product is **sugar**. Other leading field products are **tobacco**, coffee, and tropical fruits.

In the uncultivated districts immense herds of **cattle** are raised. The domestic animals are oxen, horses, and swine, which form a great proportion of the wealth of the inhabitants.

The **minerals** have not been much explored. Gold and silver exist, but not in large quantities. In the district of Santiago are rich copper mines, the ores of which are exported to Europe.

The great **industries** of Cuba are the growing and manufacture of sugar and tobacco. In 1890 the sugar product was 700,000 tons, of which more than three-fourths was shipped to the United States. About 200,000,000 cigars are exported every year. The recent development of cigar-making at Key West, Florida, has materially depressed the same industry in Havana and other Cuban cities.

The **commerce** of the island is chiefly with the United States, Spain, and Great Britain. In 1890 our imports from Cuba had a value of $54,000,000, and in the same year we exported to the island goods to the value of $13,000,000.

Havana, the capital, situated on the north coast, is the greatest depot and market for sugar in the world. It is about as large as Milwaukee.

The industrial progress of Cuba is retarded by a system of government under which the great majority of the people are excluded from participation in public affairs. All the chief office-holders are Spaniards, responsible only to the ministry at Madrid. As a consequence of this system popular revolts have been frequent.

(b) **Porto Rico**, an island of the West Indies, is about half as large as New Jersey, and has a population equal to that of Brooklyn. The chief products are sugar, tobacco, and coffee. *San Juan* is the principal port.

(c) The **Philippine Islands**, in the East Indies, are situated to the southeast of China. There are more than a thousand islands in the group, but the only one of commercial importance, and the largest, is Luzon. The principal products are tobacco, hemp, sugar, and coffee. Manila cigars, and cordage made from Manila hemp, are largely exported to Europe. *Manila*, the capital and chief seaport, is a city about as large as Buffalo. Our imports from the Philippine Islands in 1890 amounted in value to $12,000,000. Our sales to these islands have heretofore been of small value, but with their prospective destiny as a colonial dependency of the United States, their commercial importance must increase.

The **Canary Islands**, in the Atlantic off the northwest coast of Africa, are now chiefly famous for the production of the dyestuff known as *cochineal*. The Peak of Teneriffe, more than 12,000 feet high, is situated in the island of the same name, which is the largest of the Canaries.

CHAPTER X

OTHER EUROPEAN COUNTRIES

I. THE NETHERLANDS. — The Netherlands (Holland) lies north of Belgium. It has Germany on the east, and the North Sea on the west. It is as large as Maryland, and has a population about twice as great as that of Massachusetts.

The **government** is a constitutional monarchy. The legislature, called the States General, has two houses, the upper or First Chamber, elected by the Provincial States, and the Second Chamber, elected by taxpayers.

The **climate** is remarkable for frequent and sudden changes from cold to extreme heat. In summer the mercury often rises to 90 degrees, and the winters are sometimes so severe that the rivers are frozen over, and to such a depth that loaded wagons may cross them on the ice.

Surface. — Most of the country is low-lying and flat, and in the coast districts much of it is below the level of the sea. In these districts the land is, in some parts, protected from inundation by sandbanks or *dunes* (downs), formed by the action of the water at the mouths of the Rhine, Meuse, and Scheldt, which flow into the sea through Holland. Where there are no sandbanks immense *dikes* have been constructed, and these are kept in repair at the public expense.

The **soil** is generally very fertile. In the *Polders*, as the low-lying land is called, there is excellent and abundant pasturage for cattle. The lighter soils are well suited for the growth of cereals and fruits. Great crops of oats, rye, and potatoes are raised.

Among the other agricultural products are wheat, pod-crops, flax, and the sugar-beet. Seeds and bulbous plants and flowers are largely raised for export. In the district of Haarlem, on the northwest coast, the growing of tulips and hyacinths is a distinctive industry.

The raising of **dairy cattle** is a great business, particularly in North Holland; and butter and cheese are important articles of export. Large numbers of cattle are also reared for foreign markets. The value of Dutch **oxen** and **sheep** sold in England is more than $3,000,000 annually. Among the other domestic animals are **horses** and **swine**. Dutch horses are of great size and strength. **Bee-culture** and **poultry-raising** are also profitable occupations.

With the exception of coal, which is found in the southeast district of Limburg, there are no **minerals**. The coal mines are worked by the government. Clays, excellent for the making of tiles, bricks, and pottery, abound in many parts.

Though all the raw material in metals, and most of the coal, are imported, Dutch **manufactures** are varied and of great total value. Cotton and linen goods are the chief products for export. There are considerable manufactures of iron, steel, copper, lead, glass, and Delft-ware. Gin is a well-known product, taking its name of "Hollands" from that of the country. There are many beet-sugar and soap-factories, and breweries. Wooden shipbuilding is active in the coast towns, the timber coming from Norway, and in great rafts down the Rhine from Germany.

Blankets, *friezes*, and other cloths are made at Leyden and Tilburg; *calicoes* and rich *damasks* in the northern district of Overyssel; *carpets*, *silk stuffs*, and *yarns* in the neighborhood of Utrecht; and *firearms* and *glassware* in South Holland.

Wind is the motive power for driving machinery, as well as for the engines employed in operating the water-system of the numerous canals. Windmills are everywhere to be seen. Steam machinery has, however, been introduced in recent years, and is now coming into more general use.

The **fishing** industry is very extensive and profitable. More than 4000 vessels are engaged in it, and it gives employment to 15,000 men. The value of the annual product of the herring-fisheries, chiefly in the North Sea, exceeds $2,000,000. There are also prolific oyster-beds, the product of which is largely exported to England.

The system of **internal communication** in the Netherlands is complete and excellent. It is a land of **canals**, a network of which covers nearly all of the country. There are 2000 miles of these waterways navigable for large vessels. Smaller canals for local communication, as well as for drainage, intersect the country in every direction. One of the most important canals is that which connects Amsterdam with the North Sea. The construction of this canal cost $10,000,000. It is 80 feet broad and 23 feet deep. The **railway-system** forms connections on the south with Belgium, and on the east with Germany. There are about 1800 miles of railways, more than half of them owned by the state.

The large **rivers** which flow through the Netherlands are the Rhine, the Meuse (Dutch *Maas*), and the Scheldt. In their course to the sea these rivers intersect the provinces of Zealand and South Holland by numerous estuaries and channels, forming considerable portions of these districts into groups of islands.

The Rhine, after entering the Netherlands from Germany, divides into two great branches, one of which, flowing south, unites with the Maas; the other, flowing west, forms junctions with several smaller streams, and pours its waters into the North Sea. The Yssel, another arm of the Rhine, flows north into the Zuyder Zee, a large gulf of the North Sea, which penetrates sixty miles into the country.

The Dutch have long been distinguished as a nation of enterprising merchants. From early times their navigators have traversed the seas of the world, and their traders have been the founders of successful colonies. Relatively to its size the Netherlands has a much greater **foreign commerce** than any other country of the European continent, except Belgium.

The value of its exports and imports is nearly $1,000,000,000 annually. In the imports from its colonial possessions, as well as in its own products, it has an extensive commerce; while by way of the Rhine the Dutch conduct a large share of the sea-borne commerce of Germany. The exports and imports of the Netherlands are mostly to and from Germany and Great Britain.

Its trade with our own country is considerable. In 1890 the value of Dutch imports from the United States (including the imports of the Dutch colonies) amounted to $25,000,000, the main items being cotton, grain, lumber, beef, and pork; iron and steel goods; copper, kerosene, and tobacco. The exports from the Netherlands to the United States in that year had nearly the same value, and included of *home produce*, cheese, pickled fish, flax, spirits, and vegetables; and of *colonial produce*, rice, spices, drugs, and chemicals, rubber and tobacco. Precious stones also were among the exports to the United States.

Although, owing to the peculiar formation of the country along the coast, the Netherlands possesses no good natural harbors, it has a considerable merchant marine. In 1890 2000 vessels bearing the Dutch flag entered the ports of the kingdom. The river trade which passes through the Netherlands from Germany and Belgium is very valuable. The cargoes are chiefly of grain, timber, coal, and iron.

Being a country densely populated, and having extensive manufactures, the Netherlands has many cities and towns of importance.

Amsterdam, the constitutional capital, is situated near the Zuyder Zee, at the confluence of the small river Amstel with an arm of that gulf. Most of the city is built on piles, and, like most other Dutch cities, it is intersected by canals that are crossed by numerous bridges. The characteristic industry is the cutting and polishing of diamonds. Ten thousand persons are employed in this work. Amsterdam is one of the principal diamond-markets of the world. The other great industries are sugar-refining, and the manufacture of gold and silver ware, cotton and silk goods, pigments and chemicals. There are also numerous dock-yards, breweries, and distilleries. Amsterdam is about as large as Baltimore.

Rotterdam, the second city in size, and the chief commercial center, is situated in South Holland, on the Maas River, about twenty miles from its mouth. It has numerous canals, and is protected from the sea by enormous dikes. The industries include shipbuilding, gin-distilling, sugar-refining, and the manufacture of soap, beer, oils, and gold and silver ware. Great quantities of butter and cheese, and large numbers of cattle, sheep, and swine are exported through this port to England. Rotterdam is twice as large as Indianapolis.

The termination *dam* in the names of Dutch towns has an appropriate meaning: Rotterdam = the *dam* or dike of the *Rotte*, a small river which flows through the city; Amsterdam, or Amsteldam = the *dam* or dike of the *Amstel*.

The Hague (Dutch *den Haag*), thirteen miles northwest of Rotterdam, and situated a few miles from the coast, is the political capital. The place possesses little industrial consequence, though it has a few metal foundries, breweries, and gin distilleries. Fishing is the occupation of a large part of the inhabitants. The city is important chiefly as the seat of government and the center of politics and fashion. It is about the size of Scranton.

Flower Market. Rotterdam

The Dutch **foreign possessions** are in the East and West Indies. They cover an area about three times as great as Texas, and have a population about half as large as that of the United States.

The East Indian possessions are much the more important, and of these the most valuable is the island of **Java,** with the neighboring island of **Madura.** These islands taken together are somewhat larger than Cuba, and they contain 20,000,000 inhabitants, all but a small fraction of whom are of native races. There are great forests of teak. The principal field-products are coffee, sugar, rice, cotton, tobacco, and tea. Rice is the largest crop, being the principal food of the dense population.

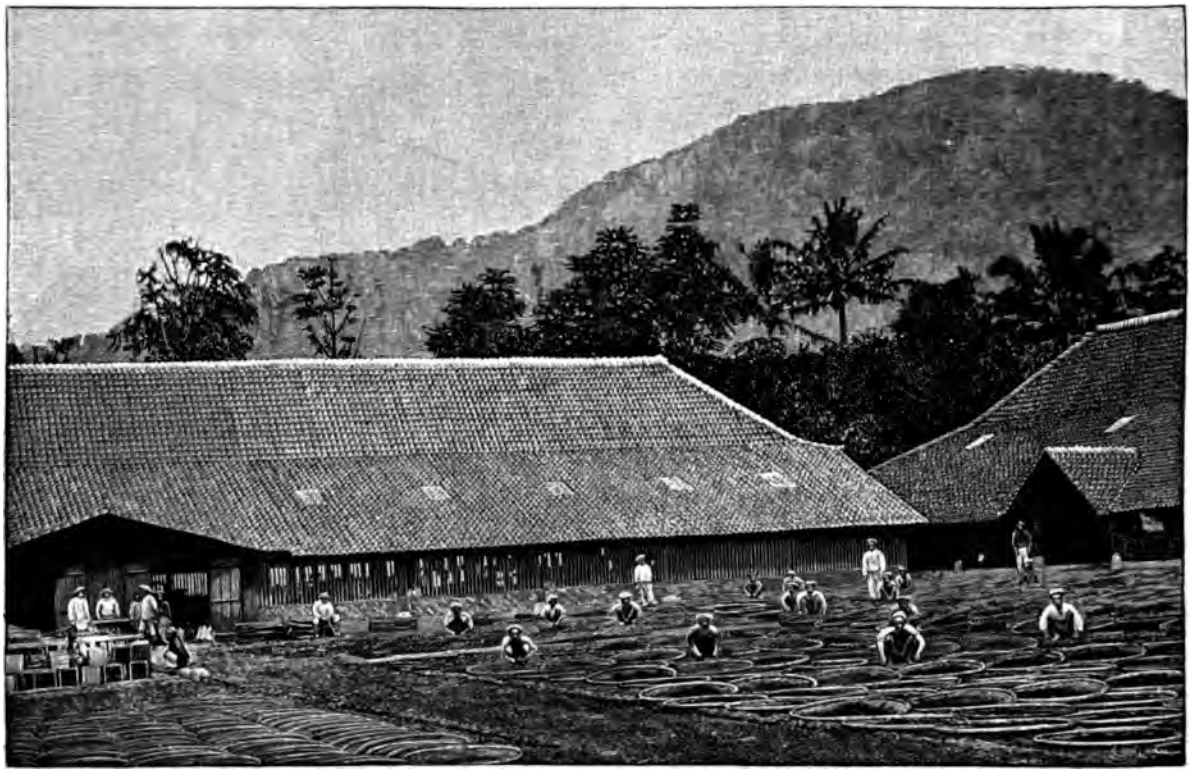
Sugar and coffee, however, are the most valuable exports.

The island of Java has long been famous for its **coffee.** Most of the coffee-lands are owned by agents of the home government. The natives are obliged to work on the coffee plantations about a month in each year. The annual product of coffee is 60,000 tons, of which five-sixths are raised on government lands. The export of this, as well as of other products, is principally to the Netherlands. *Batavia,* a seaport of Java, is the capital of the Dutch East Indies. The city is half as large as Providence.

In 1890 the United States imported from the Dutch East Indies products to the value of $6,000,000, and exported to these colonies goods to the value of $2,000,000.

Borneo, which is nearly three times as large as Java, has valuable coal deposits, and produces and exports sugar, spices, gutta-percha, and camphor. All but the northern coast region is claimed by the Dutch. **Sumatra** has mines of coal, iron, lead, copper, silver, and gold. Precious stones also are found. In **Banca**, a neighboring island, are mines of excellent tin. Spices, particularly nutmegs and cloves, are the chief products of the **Moluccas**, or Spice Islands. Papua, or **New Guinea**, is the largest island in the world. Its resources have been but little developed. The Dutch claim is to the western half of the island.

The Dutch "West Indies" consist of *Surinam*, or Dutch Guiana, and *Curaçoa*. **Surinam** is a district on the north coast of South America. It has an area about equal to that of New York State, and a population of 60,000, mainly negroes. Its chief products are sugar, cocoa, coffee, and rum. The capital is *Paramaribo*. **Curaçoa** is an island off the coast of Venezuela. Cotton and sugar are cultivated, and salt is exported. Curaçoa cordial is flavored with a peculiar species of orange that flourishes here. The Dutch West Indies are industrially in a backward condition.



Coffee Drying, Java

II. BELGIUM. — Belgium, though the smallest kingdom of Europe, ranks fourth in respect to imports from the United States. It lies between France and the Netherlands, and has Germany on the east of it. On the west the coast line of about forty miles is washed by the North Sea.

It is one of the most densely peopled countries in the world. Though its **area** is less than one-fourth that of the State of New York, its population is greater.

New York State has a population averaging 122 for every square mile of its area; the population of Belgium averages 542 to the square mile.

The **government** is a constitutional monarchy. The legislature consists of a Senate and a Chamber of Representatives, both houses being elected by the people.

The general formation of the country is a gradual slope from the Ardennes highlands on the southeast to the low-lying districts on the seacoast and the Netherlands border. In these districts the **climate** is moist and cool. On the higher slopes the winters are very cold and the summers hot. There is much rain in April and November.

A considerable part of the southern coast district (West Flanders) is below the sea-level, and the waters of the sea are kept out by dikes. In many places there are dikes along the banks of the rivers to protect the adjacent lands from being flooded.

The **soil** is fertile. More than one-half the area of the country is under cultivation. One-sixth is covered by forest. Belgium is a country of small farms, and the farming, which is mostly carried on by spade-culture, is the best and most productive in the world. Wheat, rye, and oats are the principal cereals. Flax is extensively grown. The sugar-beet is raised in considerable quantities both for fodder and for sugar-making, an industry which has greatly increased in recent years. Potatoes are raised in all the provinces. The vine is cultivated, but Belgian wines are not of good quality. Tobacco, hops, chicory, and vegetable dyes (see *madder*, page 68) are other field products.

Horses, cattle, and **sheep** are the principal domestic animals, and large numbers of them are raised for export as well as for home use. Belgian horses are highly esteemed in the markets of Great Britain.

The Belgian government gives much encouragement to stock-breeding and the improvement of agriculture. At Brussels an exhibition is held every five years, at which prizes are given for the best exhibits of horses, cattle, agricultural implements, and farm produce.

Belgium has great wealth in **minerals,** particularly in iron and coal of the best quality, and these resources are developed to the greatest possible extent. More than 100,000 persons are employed in the coal mines, and the annual product is 17,000,000 tons. The output of iron ore exceeds 1,000,000 tons annually. The principal mining districts are in the southern provinces of Hainaut, Namur, Liége, and Luxembourg. There are also mines of zinc, lead, and copper. Black marble of excellent quality is found at Dinant in the province of Namur.

The **manufactures** of Belgium are as varied and extensive as the resources of the country are abundant. As we have seen, flax is a staple crop. Nearly half a million people are employed in its culture and preparation, and in the manufacture of the numerous fabrics of which it is the raw material. Belgium is famed for linens of the finest quality. This industry is carried on extensively in East and West Flanders, at Brussels, and at Mechlin. Lawn and damasks are noted products of Bruges, and Ypres is one of the great centers of woolen manufacture. Brussels has a world-wide reputation for its carpets and laces.

The principal centers of cotton manufacture are Ghent, Bruges, Mechlin, and Antwerp. Metal-working is mainly carried on in the great mining districts of the south and southeast. At Liége, firearms, machinery, zincware, and tinware are made. At Namur there are brass and wire works, and at Charleroi great nail factories. Among other industries of Belgium are sugar-refining, and the manufacture of straw bonnets, paper, porcelain, and glassware.

At a very early period the inhabitants of Flanders — the Flemings or Flemish — had acquired a wide repute for industrial enterprise and skill, particularly in the weaving of woolen cloth, and for many centuries Flanders was the principal seat of this important manufacture.

Belgium has considerable coast and deep-sea **fisheries.** In 1890 there were nearly 400 Belgian vessels employed in this industry, and the value of the product, principally of herring, cod, and oysters, was half a million dollars.

The system of **railways** and **canals** is excellent. The mining and manufacturing districts and towns are connected by rail, navigable river, or canal, and some of the canals are the best in Europe. A canal which connects Brussels with the coal-mining districts crosses several other canals of the same grade, forming a waterway for the transport of coal, not only to the principal towns of Belgium, but to France and the Netherlands. In this canal the boats are moved from one level to another by powerful hydraulic machinery instead of through locks. Belgium has nearly 3000 miles of railways, most of them owned and worked by the state.

The principal **rivers** are the Scheldt and the Meuse. Both take their rise in France, and traversing Belgium, the Scheldt in the southwest, and the Meuse in the southeast, flow through the Netherlands into the North Sea. From these navigable rivers the canal system of the country is abundantly supplied.

The **foreign commerce** of Belgium, which is mainly with England, France, and Germany, is very great. In 1890 the value of its exports and imports exceeded $1,200,000,000.

The exports of the United States to Belgium amounted in 1890 to $27,000,000 in value, and our imports from Belgium in the same year had a value of $9,000,000. Our sales were principally cotton, grain, meat products, kerosene, and tobacco; and our chief purchases were iron and steel goods and glassware; raw and manufactured flax and hemp; furs, gloves, and precious stones.

Brussels, situated in the interior province of Brabant, is the industrial as well as the political capital. It is connected by canals with the principal cities of Belgium, and by railways with France, Germany, and the Netherlands.

This city is famed for the manufacture of lace and carpets, the latter made of flax and wool. The lace is made of very fine linen. Among the other industries are manufactures of damask, ribbons, porcelain, and jewelry. Brussels is about as large as St. Louis.

Laces are made at Brussels which sell at $40 a yard. The flax used in making these fine qualities costs from $60 to $80 a pound. The beautiful fabric known as damask derives its name from that of *Damascus*, a city of Asiatic Turkey, in which it is supposed to have been first manufactured.

Antwerp is situated on an estuary of the Scheldt. It is commercially important not only as the principal seaport of Belgium, but as a transit port for much of the sea-borne commerce of South Germany. This city does considerable shipbuilding. Among its varied factory products are cotton and linen goods; black silks and sewing-silk; gold and silver lace; carpets; and refined sugar and petroleum. Antwerp is somewhat larger than the city of Washington.

In former times Antwerp was preëminent as a commercial city. As early as the year 1550 it had a population of more than 200,000. Two great fairs were then held at Antwerp every year, and these were attended by merchants from all parts of Europe.

Ghent, thirty miles northwest of Brussels, is a center of cotton and leather manufactures. It has also sugar-refineries, flax-spinning mills, and woolen mills. Though an inland city, it does considerable shipbuilding, being connected with the sea at the mouth of the Scheldt by a great canal. The docks are capable of accommodating several hundred vessels. The city is about twice the size of Nashville.

Floriculture is an interesting industry of Ghent. Its flower-shows are the earliest and the finest in Europe. More than sixty firms are engaged in this business, and they have a busy trade with Germany, France, and Russia.

Liége, in the southeast province of the same name, and situated on the Meuse, is about twice the size of Lowell. It is in the heart of the great coal, iron, lead, and zinc mining district, and a great variety of metal wares is made in this city. Liége has a wide reputation for the manufacture of fire-arms, employing 30,000 men in this industry. It also turns out steam-engines, saws, files, nails, needles, and clocks, besides cotton and woolen goods to a great yearly value. It is the principal cattle market of Belgium.

Mechlin (French *Malines*), on the river Dyle, fifteen miles southeast of Antwerp, is noted for the manufacture of lace. It has also cotton, linen, and woolen mills, and numerous breweries. It is half the size of Allegheny.

Verviers, fifteen miles from Liége, is the center of a woolen-cloth manufacturing district. It contains sixty cloth mills, employing 40,000 hands. The value of its annual exports of cloth to Switzerland, Italy, and America exceeds $5,000,000. Verviers is about half as large as Albany.

Ostend, on the North Sea, is important for its passenger traffic. It has daily steam communication with London and Dover, and it is the western terminus of several lines of railway having connections with France and Germany. The shipping trade of Ostend is also considerable, and it has manufactures of sail-cloth, tobacco, and sugar.

III. ITALY. — Italy is a great peninsula, extending into the Mediterranean Sea from the south of Europe. The great chain of the Alps Mountains separates it on the north from Switzerland, and on the northeast from Austria. On the west and south its shores are washed by the Mediterranean, and on the east by the Adriatic Sea.

The **area** of Italy, including the adjacent large islands of Sicily and Sardinia, is nearly the same as that of Nevada, and its **population** is about half as large as that of the United States.

From its northern boundary of the Alps to its southern extremity, Italy extends about 600 miles. Its greatest breadth does not exceed 300 miles. The Apennines mountain chain extends nearly the whole length from north to south, generally about midway between the Mediterranean and Adriatic coasts.

The **government** is a constitutional monarchy. The legislative power is vested in the king and a parliament composed of a Senate and a Chamber of Deputies. Members of the Senate are appointed by the king for life. The Deputies are elected by such taxpayers as can read and write.

Throughout the greater part of the country the **soil** is productive and the **climate** highly favorable to agriculture, which is the occupation of the majority of the people. More than three-fourths of the total area is capable of cultivation, though much less than half is under tillage. About one-eighth is covered by forest. The climate is generally dry and warm. In the Alpine provinces of the North the winters are severe. An almost tropical heat is a feature of the climate in the extreme south.

The principal **agricultural products** are wheat, maize, and rice; hemp, flax, and cotton; and numerous kinds of fruits, including olives, oranges, lemons (from Palermo), figs, dates, and melons. In wine-growing Italy ranks second to France alone, while its product of raw silk largely exceeds that of France. The island of Sicily has been called "one great wheat farm." In the northern province of Lombardy the cultivation of the mulberry-tree is one of the chief occupations of the people. The value of the annual yield of silk in this province is about $25,000,000.

The domestic animals are chiefly **cattle, sheep, goats,** and **swine.** Large numbers of sheep are raised in the mountain districts. The export of wool is, however, not very great. Most of it is used in domestic manufactures.

Minerals. — In the island of Sardinia there are rich mines of lead, iron, zinc, and copper, but these have not been fully developed. Iron, tin, and lead are found in the small island of Elba, off the northwest coast. The island of Sicily has extensive mines of sulphur in the vicinity of Mount Etna, and this is an important article of export. Italy is famous for its product of marble, particularly the beautiful white marble of the northwestern district of Carrara.

The **fisheries** of Italy are extensive and profitable. More than 60,000 men are employed in them. The Mediterranean affords exhaustless supplies of tunny, anchovies, sardines (so named from the island of *Sardinia*), pilchards, and mackerel, all of which are caught in immense quantities. Oysters and precious coral are other products of the Italian fisheries.

The development of **manufactures** has been retarded by the want of coal, of which hardly any is found in Italy. In recent years, however, the production of iron goods has been increasing. The making of olive-oil is an important and widespread industry. Immense quantities of this product are exported. The manufacture of wine is also very considerable, but the quality of the product is in general inferior to that of France and Spain, and the export is comparatively small. There are silk factories in the northern provinces, and domestic manufactures of coarse cottons and woolens in nearly all parts of the country. Artistic work in marble and mosaics is a characteristic industry of Italy. *Carrara* has from ancient times been famous for statuary. The value of the annual product of its marble quarries is nearly $4,000,000.

There are more than 7000 miles of **railways,** a large portion of them belonging to the state. Connection has been formed with the French and Swiss railway systems by two great tunnels through the Alps, — the Mont Cenis tunnel opened in 1871, and the St. Gothard tunnel opened in 1881. Most of the **canals** are in the northern provinces of Piedmont, Lombardy, and Venice. Many of them are navigable for large vessels.

The **rivers** are for the most part navigable only for small boats and barges, but they supply motive power for manufactures. The largest river is the Po, which rises in the Alps on the French frontier and, receiving numerous tributaries in its course, flows eastward through the fertile plain of Lombardy into the Adriatic Sea.

The **foreign commerce** of Italy is chiefly with France, Germany, Austria-Hungary, and Great Britain. The most valuable exports are raw silk, wine, olive-oil, sulphur, fruits, and fish; and the main imports are grain, coal, timber, and manufactured goods.

From the United States Italy imports cotton, tobacco, kerosene, beef and pork, lumber, copper, and iron and steel goods. We take from Italy raw and waste silk, lemons and oranges, drugs and chemicals, almonds, preserved fruits, macaroni, marble, works of art, and hat and bonnet materials. The value of our sales to Italy in 1890 was $13,000,000. The value of our purchases from Italy in the same year was $20,000,000.

Italy is favorably situated for sharing in the great increase of Mediterranean commerce which has resulted from **the opening of the Suez Canal**. Before the discovery of the ocean route to India the Mediterranean ports conducted a large part of the business of the world, and Genoa and Venice were famed for their maritime trade. (See page 25.)

Rome, the capital, is situated near the Mediterranean coast, twelve miles from the mouth of the Tiber. Commercially this city, so famous in ancient times, is of little consequence. It is rich in treasures of art, especially in painting and statuary, and contains a vast number of remains of palaces, temples, and arches that were built two thousand years ago. Rome is nearly as large as Cincinnati.

Naples (Italian *Napoli*), situated on the beautiful bay of the same name, is the largest city of Italy. It has considerable manufactures, chiefly of silk, and exports dried fruits, wines, argol, olive oil, and coral. It is nearly as large as St. Louis.

Genoa, on the northwest coast, has an excellent harbor, and is the chief banking center and commercial port of northern Italy. The main exports are olive-oil, rice, fruits, and silks, the value of the total exceeding $20,000,000 annually. Rising from a narrow strip of shore, the most of Genoa is built upon the steep slopes of the Alpine foothills, and when seen from the bay the city presents an aspect which well entitles it to the name the Genoese give it — "the Superb." The great Italian emigration to Argentina has passed mainly through this port. The city is about as large as Rochester.

Milan, in the inland province of Lombardy, is the principal center of silk manufacture. It is the second city of Italy in population, and is as large as San Francisco.

Venice, an important and famous seaport on the Adriatic, is built on a cluster of small islands. Its street are canals, and its vehicles are boats. It has manufactures of mirrors, gold and silver ware, silks, velvets, and laces. Some shipbuilding and sugar-refining are done at this port. Venice is about as large as Kansas City.

IV. RUSSIA. — The Empire of Russia comprises the whole of the eastern part of Europe, from the Arctic Ocean in the north to the Black Sea in the south, and all the northern and central regions of Asia. This vast territory covers more than one-sixth of the land-surface of the earth. In **area** it is much greater than the United States and Canada taken together. Russia in Europe comprises about three-fifths of that grand division, and contains three-fourths of the population of the empire.

The **government** is an absolute monarchy. All authority, legislative and executive, is in the emperor, whose will is law. The administration of the various departments of government is directed by four councils or boards, the members of which are appointed by the emperor, and hold office at his pleasure.

The emperor of Russia is called the Czar, or Tsar. Like the German *Kaiser*, this word is derived from *Cæsar*, a title of the Roman emperors.

Owing to the vast extent of its area Russia has many varieties of **soil** and **climate**. In the northern zone, portions of which lie within the Arctic Circle, the seas and harbors are blocked with ice through a great part of the year. In the regions bordering on Germany, Austria, and Turkey, and lying between the Baltic and Black seas, the soil is fertile, and produces most of the cereals and vegetables common to other European countries. The southeast is mostly an arid region.

A large part of the area of Russia is unfit for cultivation, and of the arable land but a small proportion is under tillage. Nevertheless agriculture is the occupation of most of the people.

In the western provinces, **wheat**, **rye**, **barley**, and **oats** are produced in great quantities. Rye, as well as **millet** and **buckwheat**, which are largely grown in the South, furnishes the principal food of the rural inhabitants. In recent years the cultivation of **the potato** has been introduced. **Tobacco**, the **sugar-beet**, **hemp**, and **flax** are important crops.

Cotton is raised in the Caspian provinces. The home consumption of this material is 160,000 tons annually, of which one-fifth is raised in Asiatic Russia, the deficiency being supplied by the United States, India, and Egypt. In Trans-Caucasia, a southern province, **silk** is produced.

Between the half-frozen marshlands (*tundras*) of the North, and the undulating plains (*steppes*) of the South, the country is for the most part forest-covered. This vast woodland is dotted with thousands of villages and their surrounding farms, occupying in all about one-tenth of the area. Oaks and beeches predominate in the higher latitudes; cone-bearing trees in the central region. **Timber** is an important article of internal commerce, being the material almost everywhere used for house-building and fuel.

The more important **minerals** of Russia are found chiefly in the region of the Ural Mountains. They include gold, platinum, copper, and iron. The iron, which is of excellent quality, is extracted from magnetic ores. Precious stones, especially emeralds and diamonds, are found in the same region. There are coal fields in the Polish provinces, and in the districts about Moscow.

In Siberia, on the eastern slopes of the Ural range, there are mines of gold, silver, iron, copper, lead, coal, and salt. Before the discovery of gold in California and Australia, the chief supply of Europe came from these mines. The Siberian deposits of graphite are the largest yet discovered. In Trans-Caucasia are the great petroleum fields already described (see page 58). The mineral resources of Russia have not in general been well developed, owing to remoteness of deposits and inadequate transportation facilities.

There are 25,000,000 **cattle** in Russia. **Horses** and **sheep** are raised in large numbers in the southern provinces. In all the agricultural districts **swine** are abundant. Most of the horses are obtained from the half-wild breeds of the Cossacks and Kalmucks, semi-civilized tribes that inhabit the basins of the Don and Volga rivers. The *steppes* of the South afford pasturage for large numbers of sheep.

The **reindeer** is the principal domestic animal in the extreme north, particularly in the Arctic province of Lapland, where this animal forms the principal wealth of the inhabitants. In the northern provinces of the empire there are great numbers of wild animals from which valuable **furs** are obtained.

In the White Sea, a gulf of the Arctic Ocean, **herring**, **cod**, and **salmon** are caught. The more valuable fisheries are, however, near the mouths of the rivers that flow into the Black and Caspian seas and the Sea of Azof, **sturgeon** being the principal product exported. The value of the annual yield of the Russian fisheries exceeds $10,000,000.

Russia is not a great manufacturing country. The principal **factory industries** are spinning and weaving flax and hemp, and tanning leather. "Russia leather" is a well-known product of the tanneries. An imitation of it is now extensively sold. Large quantities of sail-cloth and rope are exported. In a few of the principal towns there are manufactures of silk, wool, and cotton fabrics. Metal smelting and working are chiefly done in the Ural provinces. Sheet-iron is the principal finished product, and in this manufacture the Russians are unrivalled.

The numerous large **rivers** are generally navigable. With the **canals**, which are also numerous, they furnish so extended a system of communication between the chief cities and industrial districts of European Russia, that the building of **railways** has not pressed itself as a necessity upon the government. Russia has, however, more than 18,000 miles of railways. A considerable portion of them is owned by the state.

The central region of the country is an extensive plateau a thousand feet above sea-level. From this plateau the land slopes gradually towards the Arctic Ocean in the north and the Black and Caspian seas in the south. The Volga, the largest river in Europe, flows into the Caspian Sea; the Dnieper, into the Black Sea. In the north, the great river Dwina pours its waters into the White Sea.

The **foreign commerce** of the empire is very great. The value of its exports in 1890 exceeded $500,000,000, and in the same year it imported goods to the value of $300,000,000. Most of the trade is with Great Britain and Germany. The great exports are cereals, flax and hemp, wool, tallow and hides; and the imports are manufactured goods. Russia is the principal wheat-exporting country of the world, the United States ranking next.

In 1890 Russia exported to the United States products to the value of $3,000,000, the chief items being wool, hides, bristles, flax and hemp, and sheet-iron.

In the same year the United States exported to Russia products to the value of $10,000,000 — cotton, naval stores, and farming-implements being the great items.

Much of the inland mercantile business of Russia is transacted at **fairs** held annually at important trade-centers where merchants from all parts of the country meet and exchange the products of the empire as well as the imports from Asia and West Europe. The greatest of these fairs is that held at Nijni (Lower) Novgorod on the Volga (see page 19). At *Poltava* and *Kharkof*, in the southwest, other annual fairs are held.

St. Petersburg, the capital of the empire, is situated on the River Neva, at the head of the Gulf of Finland, an arm of the Baltic Sea. It is connected by railway and canal with all the principal producing districts, and it carries on one-third of the foreign commerce of the empire. Several of the manufactures of St. Petersburg are under the control of the government. In these establishments beautiful tapestries, mirrors, and wares of crystal and porcelain are produced. Cotton and linen fabrics and iron and steel goods are also made at St. Petersburg. This city is about the size of Philadelphia.

St. Petersburg is a modern city. It was founded in 1703, by the emperor Peter the Great. A large part of it is built on islands of the Neva delta. For several months of the year this river is frozen to a depth of five or six feet.

Kronstadt (or Cronstadt), on the Gulf of Finland, twenty miles west of St. Petersburg, is the greatest naval station of the empire. Before the opening of the ship canal from this place to St. Petersburg, in 1885, Kronstadt was the most important commercial port of North Russia.

Riga, on the Baltic, near the mouth of the Southern Dwina River, has manufactures of soap, glass, iron, cloth, leather, sugar, and tobacco. It does considerable shipbuilding, and exports flax and hemp, linseed, cereals, timber, and hides. Riga is larger than Newark.

Archangel, on the White Sea, at the mouth of the Northern Dwina, is a port for the trade of North Russia and Siberia. The traffic is chiefly in furs, fish, tallow, hides, iron, flax, and linseed.

Shipping in this, as in other North-Russian ports is only during the summer season. In winter the rivers and harbors are obstructed by ice.

Odessa, on the Black Sea, is the principal wheat-shipping port of the empire. It has numerous flour-mills. Wool, hides, and tallow from the southern provinces are also exported here. It is connected by rail with the north and east, and has steam communication with the Mediterranean ports, with Great Britain, and through the Suez Canal with India and China. Odessa is larger than Cincinnati.

Astrakhan, in the delta of the Volga River, exports the products of the Volga and Caspian fisheries, notably sturgeon, and manufactures silk, cotton, and leather goods.

A very fine quality of fur, known as *Astrakhan*, is derived from a species of sheep found in Bokhara, an Asiatic province.

Moscow lies in the heart of Russia, and is the railway center of the empire. It sends the products of the interior to St. Petersburg for export, and distributes throughout the country the tea, silk, and other goods brought from Asia, and manufactured goods from Western Europe. Moscow has manufactures of iron, copper and silver, and silk and wool, besides sugar-refineries, skin-dressing establishments, and great chandleries. This beautiful city is nearly as large as Brooklyn.

Warsaw, in the province of Poland, has railway communication with Germany, and carries on a great export trade in cereals and raw materials. It is larger than St. Louis. **Tobolsk**, in Western Siberia, near the Ural Mountains, and situated on a branch of the Obi River, has considerable trade in grain, salt, timber, and fish. **Vladivostok**, the chief Siberian seaport and a fortified station of the Russian fleet, has some trade in furs, gold, and dried fish. It is the Pacific terminus of the great Siberian Railway now building (see *Map*, page 140). The fine harbor is never closed by ice.

V. SWITZERLAND. — Switzerland is an inland country. It has Italy on the south, Germany on the north, Austria on the east, and France on the west.

The **area** of Switzerland is about half as large as that of South Carolina, and the population is about twice as great as that of New Jersey.

The **government** is a federal republic. There are 22 states or *cantons*, each having a legislature of its own; and all the cantons are represented in a Federal Assembly, consisting of two houses, — the State Council and the National Council.

Each canton sends two members to the State Council. The members of the National Council are elected by universal suffrage, each 20,000 of the population being entitled to one member. The President of the republic is elected annually by the Federal Assembly, the houses sitting together.

Four languages are spoken in Switzerland, — German in fifteen of the cantons, French in five, Italian in one, and Romansh in one. Romansh is a Latin dialect.

Switzerland is a country of mountains and lakes, and the character of its **soil** and **climate** is as varied as is the elevation of its several districts above sea-level. The mountain peaks are capped with perpetual snow. Below the snow level, zones of vegetation have been distinguished, from the shrubs and sparse grass of the upper Alpine region to the wheat and vines of the lowest valleys. In the intervening belts pasture-land and forest cover a large area.

Nearly half the surface of the country is pasture-land and meadow; one-third is covered by barren rocks, glaciers, and water; one-sixth is forest; and about one-tenth is under cultivation. The principal agricultural products are rye, oats, and potatoes. In several districts the mulberry-tree and the vine are cultivated. Apple orchards are numerous.

Switzerland has few **minerals**. Nearly all the raw material used in the manufacturing industries is imported. The country has abundant water power, which partly compensates for the lack of coal, but a large part of Swiss wares is hand-made.

Cattle-raising is the occupation of a large number of the people. In summer the cows are driven to the mountain pastures, where they are tended by herdsmen, who live during the season in wooden huts (*chalets*). Here the butter and cheese are made, of which Switzerland exports large quantities. **Sheep** and **goats** are also raised in great numbers.

The *chamois* is the wild goat or antelope of the Alps. From the skin of this animal the soft leather so-called was first prepared. The market supply of this leather is now made from sheepskins.

The best known Swiss **manufactures** are clocks and watches, for which Geneva, in particular, is famous. More than 200,000 watches are produced annually in this canton. Chronometers, music-boxes, and mathematical instruments are also made. Silk, linen, and cotton fabrics, especially machine-made embroideries, are manufactured in several cantons. The other industries of Switzerland include wood-carving and the manufacture of leather, paper, and tobacco.

The grandeur of the scenery of Switzerland attracts to this country tourists from all parts of the world. Hence, hotel-keeping is an important source of revenue to the Swiss. There are about 1000 hotels in Switzerland, giving employment to 16,000 persons, and having receipts which amount annually to more than $10,000,000.

Internal communication is afforded by excellent roads, by steam navigation on the lakes, and by a network of railways penetrating the Alpine valleys and forming a complete connection between the important towns and industrial districts. The opening of the railway tunnels through the Alps has greatly benefited the silk manufactures of Switzerland by facilitating the importation of the raw silk from Italy.

Switzerland has numerous **rivers**, but owing to the nature of the country they are not navigable for commercial purposes. Two of the greatest rivers in Europe, the Rhine and the Rhone, take their rise in the Swiss Alps, but in the mountainous cantons through which they flow their fall is too rapid to permit of navigation. So also, the physical formation of the country is an obstacle to the construction of canals.

The greater part of the **foreign commerce** of Switzerland is carried on with the adjacent countries, particularly with France and Germany. With Great Britain also the trade is very considerable. The exports are principally clocks and watches; cotton and silk goods; and cheese and condensed milk; and the imports are chiefly foodstuffs, raw cotton, and raw silk.

In 1890 Switzerland exported to the United States lace and embroideries; cotton goods and silk; watches, musical instruments, cheese, and other products to the value of $14,000,000. Our direct sales to Switzerland are of little value.

Bern, situated on the Aar River, and 1700 feet above the level of the sea, is important only as the political capital. It is about half the size of Albany.

Geneva, situated at the southern extremity of the beautiful lake of the same name, is the center of watch and clock making. This industry is carried on principally in the surrounding villages. The city, which is about as large as Memphis, contains many fine hotels for the accommodation of the tourists who visit the district.

Zurich, in the north, is the largest city of Switzerland, and the most important commercial and industrial center. It was one of the first cities of Europe to manufacture cotton, and has fine silk and cotton mills. The city is about the size of Columbus.

VI. AUSTRIA-HUNGARY. — Austria-Hungary is situated in the central part of Europe. Russia is north and east of it, and Germany north and west. European Turkey lies to the south. At the southwest this country has about 500 miles of coast washed by the Adriatic Sea.

The **area** is somewhat less than that of Texas, and the population, 41,000,000, is about one-third as large as that of Russia.

The **government** is a limited monarchy. Since 1867 Austria and Hungary have been united under one government for foreign and military affairs, though each has its own constitution and legislature. The Emperor of Austria is King of Hungary.

The population of Austria-Hungary is composed of several races. Not less than eight languages are spoken. German is the prevailing language in Austria.

Though nearly three-fourths of the area is mountainous, the **soil** and **climate** are in general exceedingly favorable to agriculture. In the eastern section are the great plains of Hungary, forming about one-third of the area of the empire. **Wheat, rye, barley,** and **oats** are abundant in this region. **Flax** and **hemp,** and the **sugar-beet** are also largely grown. **Vine-culture** and fruit-raising, especially of **prunes,** are actively followed in the higher country. The warm regions of the south produce olives, oranges, and lemons. Austria-Hungary raises and exports large numbers of **horses, cattle,** and **sheep**. About one-fourth of the area of the country is covered with **forest.** Oak, pine, and beech lumber form an important export. Under a recent law, silk-culture is exclusively in the hands of the government. It gives employment to a large number of people.

Mining has for centuries been a considerable industry in Austria, where it is much encouraged by the government. In the northwest there are rich deposits of iron and coal. Copper is found in several districts. The salt-mines near Cracow in the extreme north are the greatest in the world. Gold, silver, lead, zinc, tin, quicksilver, graphite, petroleum, and sulphur are other mineral resources of the empire. The value of the annual output exceeds $45,000,000.

The chief **manufacturing industries,** carried on mainly in the western part, are button-making and iron working; linen, cotton, wool and jute spinning; sugar-refining; and glass and paper making.

There are 7000 miles of navigable **rivers** and **canals** in Austria-Hungary, and 17,000 miles of **railways**. Most of the railways are owned by the state. The Danube River enters the empire from Germany on the west, and in its course to the Black Sea drains nearly all the country. Its numerous tributaries are navigable for small vessels.

Though Austria-Hungary has not the advantage of an extended seacoast, its **foreign commerce** is considerable. More than half the trade is by rail with Germany. The value of its exports in 1890 was $280,000,000, and the value of its imports in the same year exceeded $220,000,000. The leading exports were grain and flour, timber, beet-sugar, cattle, hardware, and wool and woolen goods. The imports were chiefly cotton, wool, coffee, and silk.

In 1890 the value of the exports to the United States was $9,000,000, the merchandise being chiefly buttons, glassware, dried fruits, linen and cotton goods, silks and velvets, porcelain and pottery. The imports from the United States in the same year had the value of $1,000,000, the chief items being cotton, petroleum, and agricultural implements.

Vienna (German, *Wien*), the capital of Austria and of the monarchy, is somewhat smaller than New York City. It is a great trade and industrial center. From its situation on the Danube it controls an extensive water traffic. It has manufactures of silks, shawls, gloves, leather goods, pearl buttons, and machinery.

Prague (German, *Prag*), the capital of Bohemia (Austria), has manufactures of hardware and glass. In the glass industry the Bohemians have long been famous. Prague is about the size of Newark.

Budapest, the capital of Hungary (*Buda* on the west bank, and *Pest* on the east bank, of the Danube), is a city about twice the size of Buffalo. It has numerous flour-mills, and it is the center of the grain, cattle, and wine trade of Hungary. The annual product of wine exceeds 4,000,000 gallons.

Trieste and **Fiume**, on the Adriatic Sea, are the principal seaports. Trieste does considerable shipbuilding, and exports the cereals and timber of Hungary, to the value of $50,000,000 annually. Fiume also has extensive shipyards, besides manufactures of tobacco and rope.

VII. SWEDEN-NORWAY. — The Scandinavian peninsula, in which the continent of Europe terminates at the northwest, is composed of Sweden and Norway. It has the Atlantic on the west, and the Baltic Sea and Russia on the east.

The **area** of the peninsula is about twice that of Montana, and the population somewhat more than three times that of Massachusetts. *Sweden*, which is the eastern portion of the peninsula, is considerably larger than Norway, and has a population more than twice as great. *Norway* is the most sparsely populated country in Europe, the average number of inhabitants to the square mile being only eighteen.

The **government** is a constitutional monarchy. The two countries form one kingdom, but each has a legislature of its own, chosen by the people.

Over a large part of its area this peninsula is mountainous and rocky. A great mountain chain extends from north to south, forming a natural boundary between the northern portions of the two divisions of the kingdom. In the lowlands of the east and south the **soil** is fertile in considerable sections. Owing to the influence of the Gulf Stream the **climate** of the peninsula is generally milder than that of other countries in the same latitudes. As far north as 66°, barley, oats, rye, hemp, and flax are grown, but in some seasons the crops are not sufficient for home requirements. One-fourth of the area of Norway is covered with **pine forests**, and a considerable part of the timber of European commerce comes from that country.

Cattle-raising is an important industry. Vast herds are grazed during the summer in the pasture lands of the mountain valleys. **Horses** and **sheep** are also raised in great numbers. Live-stock and dairy products are largely exported.

The **fisheries** of Norway are very valuable. The rugged Atlantic coast is indented by hundreds of inlets (*fiords*) and channels, and in these, as well as in the deep seas, immense quantities of fish, particularly cod and herring, are caught. No less than 120,000 men are employed in the fisheries of Norway.

Mining is one of the most important industries of Sweden. Swedish **iron**, smelted with charcoal, has long been esteemed for its excellence. There are also mines of **copper, zinc, lead**, and **silver.** The minerals of Norway are of less extent, but there are deposits of copper, nickel, and silver.

Owing to the lack of coal the **manufactures** are not extensive. In Norway there are many sawmills for the cutting of timber, which is the principal export. Shipbuilding is largely carried on. In proportion to its population Norway has a larger shipping tonnage than any other country. One of the best-known products of Sweden is lucifer matches. Swedish matches are sold all over the world.

Sweden has 5000 miles of **railways**, about one-third of them owned by the state. Norway has 1000 miles of railway, nearly all under state ownership.

The **rivers**, being generally short and rapid, are navigable for only a few miles from the coast. They are, however, of great importance for floating down rafts of timber from the mountain forests to the fiords.

There are several good **canals** in South Sweden.

The **lakes** of Sweden cover about one-twelfth of its total area. Four of them are great inland seas, and are navigated by a busy commerce. The largest, Lake Vener, which is third among the lakes of Europe in size, has an area of 2000 square miles.

The **foreign commerce** of Sweden-Norway is mostly with Great Britain, Germany, Russia, and Denmark. Norway exports timber and fish. Sweden exports timber, metals, and live animals. Both import breadstuffs, and raw and manufactured textiles.

Our own trade with Sweden-Norway is not very great. In 1890 we sold to these countries produce to the value of $4,000,000, and purchased from them merchandise of about the same value. Our exports were chiefly beef and pork and other food-stuffs, cotton, leather, and kerosene. Our imports were iron and steel, fish, and hides.

Stockholm, the capital of Sweden, near the Baltic coast, is somewhat larger than New Orleans. It is the commercial as well as the political center of Sweden. It has a large shipping trade, particularly in the export of iron and timber, and has manufactures of cotton, wool, silk, and leather.

Norrköping, on the Baltic, is an important seaport of Sweden. In the neighborhood of this city there are large iron works and cannon foundries. Norrköping is about as large as Wheeling.

Göteborg, near the southwest coast on the Götha River and canal, is, next to Stockholm, the most important city of Sweden. It is the principal seaport, and has manufactures of cotton and woolen goods, sailcloth and tobacco. It exports iron, copper, timber and lumber, tar, and pitch. Göteborg is as large as Indianapolis.

Christiania, situated on one of the southern fiords, is the capital of Norway. It is the principal seaport, and ships great quantities of timber. It is about the size of Jersey City.

VIII. DENMARK. — Jutland, which, with a group of islands in the Baltic Sea, forms the Kingdom of Denmark, is a peninsula extending north from the German province of Schleswig-Holstein. It lies south of the Scandinavian peninsula, and has the North Sea on the west of it.

The **area** of Denmark is about twice that of Massachusetts, and its population is somewhat less than that of the same state.

The **government** is a constitutional monarchy. The legislature, called the Rigsdag, is composed of two houses, the *Landsthing* and the *Folkething*, the members of the latter elected by universal suffrage. The Landsthing is the Senate of Denmark. Some of its members are appointed by the king for life; the other members are chosen by the largest taxpayers and by elected delegates.

The **climate** is much like that of Scotland. There is seldom extreme cold except in January and February. Owing to the proximity of the sea and the low level of the country, the temperature is generally mild and the atmosphere humid.

No part of Denmark is more than 40 miles distant from the sea, and none of its surface is more than 600 feet above the sea-level.

About half the people live by agriculture. In the cultivated districts the **soil** is well adapted for the cereals and other crops of northern Europe. Denmark is famous as a grain-producing country. Most of the bread used by the people is made from rye, of which, as well as of oats and barley, large quantities are raised. The cultivation of wheat has increased in recent years. Potatoes and other root-crops are extensively grown.

About five per cent of the area of the peninsula and islands is covered with **forests**, principally of beech. This tree thrives better in Denmark than in any other European country. In many districts there are considerable areas of swamp or moor, which supply peat for fuel.

Cattle-grazing is a very important industry, and dairy products and livestock are the principal exports. Large numbers of **cattle**, **sheep**, **swine**, and **horses** are raised. Danish butter is a staple commodity in the markets of Great Britain.

Considering that Denmark has, in proportion to its size, a very extensive seacoast, it cannot be said that its **fisheries** are important. About 6000 men are employed, and the products are chiefly herring, cod, and mackerel. There is little export trade in fish.

Denmark is poor in **minerals**. There are some small deposits of coal, but no mines of metal. In the island of Bornholm there are clays valuable for the making of porcelain. On the shores of Jutland amber is often washed up by the sea.

Possessing few minerals or water-powers the Danish **manufactures** are unimportant. The principal products are of brandy, earthenware, and terra-cotta. In the neighborhood of Copenhagen there are a few iron foundries, machinery factories, and sugar refineries. Most of the raw material for iron manufactures is imported from England.

In the rural districts the people make at home a great part of the clothing they require for their own use. The Danish women are skillful in spinning and weaving cotton and wool. The men make the household furniture and most of the farm implements, as well as the wooden shoes, which are generally worn by young and old.

There are 1200 miles of **railways** in Denmark, mostly owned by the state. There are several **canals** in the peninsula and in the islands, but no rivers of any importance, because the country has no mountains or highlands. The largest river in Denmark is little more than a brook. The roads are excellent. Numerous inlets of the sea penetrate far into the coast districts. These, with the railways and canals, supply a good system of internal communication.

The greater part of the **foreign commerce** of Denmark is with Great Britain, Germany, and Sweden-Norway. More than five-sixths of the total exports are butter, eggs, pork, livestock, and cereals. The imports are chiefly raw textiles; ores and hardwares; coffee, tea, sugar, wines, and tobacco.

Denmark imported from the United States in 1890, goods to the value of $5,000,000, the chief items being cotton, food-stuffs, kerosene, and tobacco. In the same year Denmark and her colonies sent to the United States three-quarters of a million dollars' worth of hides, wool, and sugar.

Copenhagen, the capital, is in Seeland, the largest of the islands. It is the chief seaport, and the commercial and industrial center of the kingdom. The royal porcelain works of this city have a European reputation. There are also manufactures of glassware and gloves. The city is about twice as large as Louisville.

The **foreign dependencies** of Denmark are Iceland and Greenland, besides the West India islands of St. Croix, St. Thomas, and St. John. These possessions are of little commercial value. Their aggregate population is but little more than 100,000.

Iceland is an island of the North Atlantic, 600 miles west of Norway. It is about the size of Ohio, but its total population is less than that of Toledo. It is a country of lofty mountains and vast ice-fields, and is habitable only in a few of the coast districts. There is no agriculture except the growing of hay and garden vegetables. **Sheep, horses**, and **oxen** are the principal wealth of the people. One of the natural products of the island is **Iceland moss**, used as an article of food, and for medicinal purposes. The only mineral worked is **sulphur**, which is abundant in the vicinity of Mount Hecla and some other volcanoes. The fisheries are busily followed. The **exports** from Iceland are sulphur, Iceland moss, fish, and eider-down.

Greenland is an unexplored region, geographically forming part of North America. The few coast villages export cryolite (used in making soap-soda), alum, skins, and whale oil.

St. Croix, St. Thomas, and **St. John** are sugar plantations, and export about 8000 tons of raw sugar annually to the United States, Great Britain, and Denmark. The value of our imports from these islands in 1890 was half a million dollars.

IX. PORTUGAL. — Portugal forms most of the western portion of the Iberian peninsula, and is the part of continental Europe nearest to America. It is somewhat larger than Maine, and has a population about equal to that of Canada.

The **government** is a constitutional monarchy. The legislature consists of a House of Peers, composed of life members nominated by the Crown, and a House of Deputies, elected by the people.

Though the **soil** and **climate** are very favorable to agriculture, this industry is in most respects in a backward condition. The energies of the people have been devoted mainly to vine-growing and, in recent years, to cattle-grazing. Cork is a product of some importance. Oranges, lemons, olives, figs, and other fruits grow in profusion.

There are **mines** of lead and copper. The richest of these are worked by English companies, and the product is exported as raw material.

The principal **industry** is the manufacture of wine, which is busily carried on in all parts of the country. The fisheries yield sardines, oysters, and tunny, mainly for export to England, Italy, and France.

The **foreign commerce** consists principally of the export of wines, cork, pickled fish, and copper; and the import of cereals, cotton and woolen goods, machinery, iron, and coal. Most of the sales are to Great Britain, France, Germany, and Brazil (a Portuguese-speaking country), and nearly half of all the purchases are from Great Britain.

The value of our own products shipped to Portugal in 1890 was about $4,000,000, consisting chiefly of breadstuffs. In the same year we bought from Portugal merchandise to the value of $1,000,000, the great items being wine and cork.

Lisbon, the capital and chief commercial city, is situated near the Atlantic coast, ten miles from the mouth of the Tagus. It is about the size of Buffalo. It exports wine, wool, and olive-oil. Lisbon is connected by submarine cables with Brazil and England.

Oporto, near the mouth of the Douro, is the principal seaport for the shipment of wine, particularly "port" wine, so called from the name of the city. Brocades, laces, and pottery are made here. Oporto is about as large as Allegheny.

The **foreign possessions** of Portugal, though of great extent, are not yet of much commercial value.

The **Azores** are a group of small islands in the Atlantic, 800 miles west of Portugal. *St. Michael*, the largest of these islands, has an area of about 200 square miles. Oranges and pineapples are the chief exports. **Madeira**, in the Atlantic, southeast of the Azores, produces the rich wine which bears its name. The **Cape Verde Islands**, off the west coast of Africa, export coral and sea-salt. *St. Vincent* is an important coaling station. **St. Thomas**, an island nearly under the equator, exports coffee, cocoa, and cinchona.

Angola, on the southwest coast of Africa, south of the Congo River, is larger than Texas (see *Map*, page 140). It has deposits of iron, lead, and sulphur. The chief town is *St. Paul de Loanda*. **Mozambique** is a strip of territory as large as Ohio, extending 1200 miles along the southeast coast of Africa. It is rich in coal, iron, copper, and gold, but the deposits have not been developed. The principal exports are ivory, rubber, gums, and oils. The traffic in these is mostly with Portugal and England.

The seaport of **Goa**, on the west coast of Hindostan, was at one time an important trade station. The Portuguese district of the same name is as large as Rhode Island. The staple product is rice. **Macao**, a settlement on the south coast of China, not far from Hong Kong, is important only as a depot for the preparing and shipping of tea. **Timor**, an island of the East Indies, part of which belongs to Portugal, has great forests of sandal wood, which is its chief export.

X. TURKEY. — The Empire of Turkey, or the Ottoman Empire, comprises an extensive territory, including Turkey in Europe, Turkey in Asia (Asia Minor), and the adjacent provinces of Tripoli, Barca, and Fezzan in North Africa. It covers an area about five times that of Texas, and its population is somewhat greater than that of Italy.

The **government** is an absolute monarchy. The Emperor is called the Sultan. In the administration of affairs he is assisted by a Council, the members of which are appointed by him and hold office at his pleasure.

(a) Turkey in Europe comprises the greater part of the Balkan Peninsula, which lies to the south of the Danube River, between the Adriatic and Black seas. It is, in both area and population, about five times as large as the state of Maryland.

The **soil** is generally very fertile, and the **climate**, though in some districts there are extremes of heat and cold, is on the whole favorable to the culture of the crops grown in other countries of southern Europe. Agriculture is in a backward condition. Only a small area of the arable land is cultivated, and the system of tillage is primitive. The staple products are the cereals, — wheat, maize, rye, barley, — cotton, tobacco, and fruits of various kinds. Turkey produces and exports large quantities of raisins. On the southern slopes of the Balkan Mountains, which extend across the country, there are great fields of roses from which attar, or oil, of roses is made.

Attar of roses is, however, produced principally in Syria, Persia, and India. Twenty thousand flowers yield only one-third of an ounce of this oil. This quantity sells in the East for about $50.

The culture of the mulberry is an important industry in Turkey. The value of the raw-silk annually produced is $5,000,000. Vine-growing and wine-making, and the fisheries yield valuable returns. Excellent sponges are found on the Mediterranean coast.

Horses, **mules**, **sheep**, and **goats** are the principal domestic animals. Horses and mules are exported, as are also sheepskins and goatskins.

Turkey is rich in **mines** of coal, copper, lead, silver, iron, sulphur, and salt, but the deposits have not been much developed.

Among the **manufactures** of Turkey are carpets and rugs, for which the country has long been famous. But in these goods the looms of Western nations are fast becoming active competitors. Towelling of a superior kind and quality, at one time a valuable hand-made product and export of Turkey, is now largely produced by machinery in England and other countries. Turkey has some brass and copper works, and manufactures of glass and paper.

The **rivers** are not commercially important. There are 1000 miles of **railways**. The main lines, which start from Constantinople and Salonica, have connections which place Turkey in direct railway communication with the rest of Europe.

Constantinople, the capital, is the center of the **foreign commerce** of Turkey. This city, being greatly favored by its excellent geographical situation, carries on trade with nearly all the nations of the world. It has a large caravan commerce with western and central Asia. The caravans now bring mohair, silk, and opium, rather than finished fabrics and wares, as was formerly the case.

Some of these caravans have as many as a thousand camels. The leader or captain of the caravan company is elected by the traveling merchants from their own number.

Constantinople is about as large as Brooklyn. It is situated on the Bosporus, a strait which connects the Sea of Marmora with the Black Sea. **Adrianople** and **Salonica** are the only other large cities.

The trade of the United States with Turkey is not large. In 1890 we imported from Turkey merchandise to the value of $4,000,000, chiefly mohair, boxwood, and distilled oils. The value of our exports to Turkey is very small.

(b) **Asia Minor,** or **the Levant,** comprises the greater part of Asiatic Turkey. It is a region lying between the Black Sea on the north, and Arabia on the south, and having Persia on the east and the Mediterranean Sea on the west.

The name *Levant* is derived from an Italian word which means "rising" — the reference being to countries in the direction of the rising sun. It is particularly the designation of countries on the east of the Mediterranean.

Turkey in Asia is more hilly than the European part of the empire. The central region is an elevated plateau, dotted with hundreds of hamlets and villages. Here goats and sheep are herded in great numbers. In the south there are fertile valleys which produce wheat, maize, tobacco, cotton, and numerous fruits.

The United States imports from Turkey in Asia wool, opium, fruits, skins, and licorice. Most of the emery used in the arts comes from this region.

Smyrna, on the Mediterranean coast, is the chief seaport and commercial city. It possesses an excellent harbor, and has trade with nearly all commercial countries. The rugs exported from this place, though all woven in the interior of the country, are known in the markets as "Smyrna" rugs. Fig-culture is a great industry in the surrounding region. The caravan routes which terminate here have been used for centuries, and over them a busy trade is carried on with the interior of Asia. Smyrna is about as large as Milwaukee.

Damascus, the capital of Syria, is the starting-point for many caravans. In its famous bazaars oriental products and wares of every description are sold. It is as large as Smyrna.

Beyrout, on the Mediterranean coast sixty miles from Damascus, with which it is connected by railway, is a flourishing commercial port. It carries on a busy traffic with other Mediterranean ports, and since the opening of the Suez Canal, with India and China. It has direct trade with the United States, to which it exports wool and olive oil.

XI. GREECE. — Greece is the most southern part of the Balkan Peninsula. It has Turkey on the north, the Mediterranean on the west and south, and on the east the Ægean Sea, an arm of the Mediterranean.

In **area** Greece is somewhat larger than West Virginia, and its **population** is about equal to that of Indiana. A considerable proportion of the inhabitants live in the numerous islands which border the coasts.

The **government** is a constitutional monarchy. The legislature consists of one chamber elected by the people.

Though Greece is a country of mountains and hills, the **soil** is in many districts very fertile.

There are considerable varieties of **climate**. In the northern highlands the winters are often severe, but in the plains and coast districts the temperature is generally mild.

Agriculture, though the occupation of half the people, is in a very backward condition. The chief field products are wheat, barley, and maize, besides cotton, tobacco, and fruits. Large crops of grapes and olives are raised. Silk-culture is also carried on, but not so actively as in former years.

A large part of the country is pasture land. Vast flocks of **sheep** and **goats** in a half-wild state graze on the hills during the summer season.

Minerals are not abundant. There are deposits of iron, zinc, and lead, but these have not been much developed. In recent years the lead mines have been worked, and some of the product is exported. In several islands there are quarries of fine marble, of various colors, the most famous being the statuary marble of the island of Paros.

The **manufactures** are few. Cottons and woolens for home use are made in the rural districts. Shipbuilding is an industry at some of the seaports; and in many of the towns and islands there are small manufactures of silk, hardware, earthenware, and leather goods. The Greeks are skilled in sculpture, marble-cutting, and embroidering in gold and silver.

The system of **internal communication** has been much improved in recent years. There are now 600 miles of **railways**. Greece has no navigable rivers.

The **foreign commerce** of the kingdom is very considerable. The Greeks have from early times been enterprising traders, and to-day they carry on much of the commerce of the eastern Mediterranean. The exports are chiefly currants (the seedless raisins of *Corinth*), ores, olive oil, and wine; and the leading imports are cereals, metals, textiles, and timber. Most of the trade is with Great Britain, Turkey, France, and Austria-Hungary.

We send to Greece a small quantity of kerosene, taking in exchange "currants," figs, and olives.

The commerce of Greece will be much stimulated by the recently opened **Corinth ship-canal**, which greatly shortens the sea passage between Athens and western Europe. This great work was projected many centuries ago, but never practically undertaken until 1882, when the operations commenced. The canal cuts through the rocky Isthmus of Corinth, a distance of about 4 miles. It is 25 feet deep, and has an average width of 100 feet. It is lighted by electricity for night navigation, and there are breakwaters and lighthouses at the eastern entrance. The cost of construction was $5,000,000. It was opened to traffic August 6, 1893.

Opening of the Corinth Ship-Canal

Athens, the capital, is about as large as Indianapolis. This city was famed in ancient times as the center of art, oratory, and learning. The remains which still exist of its magnificent works in statuary and architecture excite the admiration of the world.

The Piræus is the seaport of Athens. It is the coaling-depot for steamers going to Smyrna, Constantinople, and the Black Sea. It has manufactures of iron-ware, cutlery, glass, and cotton. The importance of this port will be largely increased by the commerce using the Corinth Canal.

Syra, on an island of the same name in the southeast, is a busy trading port.

CHAPTER XI

THE SOUTH AMERICAN REPUBLICS

I. BRAZIL. — Brazil extends over nearly half the continent of South America. It is bounded on the northeast and east by the Atlantic Ocean, while its land boundaries touch upon every other country of South America except Chile and Ecuador. The extent of its coast-line is nearly 4000 miles.

The Portuguese were the first European settlers in Brazil. They found in the country a dyewood of brilliant red, to which they gave a name derived, it is said, from the Portuguese word for "glowing fire" (*braza*). Subsequently the whole country came to be known by the same name.

The **area** of Brazil is nearly as great as that of the United States, and its **population** is about fifteen millions. The portion of the country which can be said to be peopled comprises less than half the total area, and is for the most part included in the states bordering on the Atlantic.

Portuguese is the **language** of the people of Brazil. In all the other South American republics Spanish is spoken.

Since the peaceful revolution of 1889 Brazil has been a republic. The **government** is constituted on the federal system of the United States. The President is chosen by electoral colleges. His term of office is six years.

Situated for the most part in the torrid zone, Brazil has generally a tropical **climate**. In the vast lowland plain of the north, comprising the **basin of** the Amazon, and lying near the equator, the heat is very great. The temperature is, however, much moderated during five months of the year, from December to May, by the abundant rains let fall by the moist trade-winds blowing from the Atlantic. In the southern part the land rises gradually towards the interior until it reaches a height of from three to five thousand feet. This is the Brazilian Highland. Owing to its elevation the temperature of this Highland is considerably lower than that of the Northern Plain. In the higher lands the products are those of the temperate zone. Along the coasts and in the river basins the vegetation is tropical.

The fertility of the **soil** is shown by the wonderful abundance and variety of its productions. Only a small proportion of the area is cultivated, and nearly all the cultivated part is a strip of land a few hundred miles in width, along the coast and in the valley of the Amazon. Here foreign energy and capital are mainly employed.

Vast areas of the interior are covered by dense forests which supply valuable woods of various kinds. In the Amazon basin more than 20,000 species of trees have been found. Among the best known are **rosewood** and **satin-wood**; **shell-wood**, from which beautiful articles of imitation shell are made; the **cacao-tree** and the **rubber-tree**; and **Brazil-wood** and **fustic**, from which red and yellow dyes are obtained. Besides these, numerous medicinal plants, including **sarsaparilla** and **ipecacuanha**, are found in Brazil, especially in the basin of the Amazon.

Among the **agricultural products** by far the most important is **coffee**. This great staple is the product on which the prosperity of the country principally depends. Brazil produces and exports more coffee than all the rest of the world together. The annual crop yields about [illegible] million pounds. Half the total quantity exported comes to the United States. The State of São Paulo, on the southeast coast, is preëminently the coffee state. From *Santos*, a seaport of this state, is shipped one-third of the coffee exported from Brazil.

Next to coffee the most valuable field products and exports of Brazil are **sugar** and **cotton**. The sugar-cane thrives in almost all parts of the country. In the farming colonies of the middle and southern coast states, established in recent years by immigrants from Europe, the cereals and vegetables of the temperate zones are successfully cultivated. **Tobacco**, **rice**, and **flax** are also grown.

Mandioca, or manioc, is one of the characteristic products of Brazil. It is the plant from which *tapioca* is obtained. Large quantities are exported, and it forms the principal farinaceous food of the people.

Brazil produces a great variety and abundance of **fruits**, many of which are entirely unknown to the people of North America. Oranges and bananas grow luxuriantly.

The **mineral resources** of Brazil are very great, but with the exception of gold and diamonds, they have been very little developed. Gold is found in many places, and is systematically mined in several of the middle and eastern states. The state of *Minas Geraes* derives its name from its mineral wealth. Besides gold and diamonds this state has deposits of silver, lead, and graphite, as well as mountain masses of iron. The iron is extensively worked. In the adjoining state of Goyaz are enormous ore-beds of iron, and strata of Brazilian "pebbles" from which lenses are made.

Deposits of coal exist in many districts. In the southern state of Rio Grande do Sul there are beds of coal from four to six feet in depth, some of which are worked. Marble of various colors and excellent quality is abundant in many parts of the country. In Rio Grande do Norte are beds of kaolin.

Immense numbers of **horses**, **cattle**, and **sheep** are raised in Brazil. In the southern states vast herds of horses and oxen roam at large over the great plains. The oxen are taken with the lasso, and are valued mostly for their hides, which are exported in great quantities.

Manufactures have made but little progress in Brazil. Woolen fabrics of good quality, including fine cassimeres and merinos, are made in the southern state of Rio Grande do Sul. In this state there are also iron-mills and sugar-refineries, besides tanneries, breweries, and distilleries. In the states of Minas Geraes and São Paulo cotton goods are manufactured, the machinery being imported from the United States and Europe. At Rio de Janeiro there are cotton and silk factories.

The finances of the country have not been well managed, and the national debt and the burden of taxation have steadily increased. The native freedmen population, numbering two-thirds of the people, is thriftless; and the recent abolition of slavery has added to the difficulties of the industrial situation. Efforts have been made to find a remedy in immigration, but these efforts have not resulted in any great increase of the population. Brazil has, therefore, not been able fully to utilize her natural resources.

Brazil has about [illegible] miles of **railways**, partly owned and partly guaranteed by the government. Nearly all the lines connect seaports with inland navigable rivers. The railway system is best developed in the southern coast states, particularly in the great coffee state of São Paulo.

The area drained by the **Amazon** in its course from the Andes to the Atlantic is not less than 2,500,000 square miles in extent. With its numerous affluents, the Amazon affords navigation for large vessels for thousands of miles. In the east and south two other great rivers, the **São Francisco** and the **Parana**, with their many tributaries, supply another great system of navigable waterways.

The **foreign commerce** of Brazil is mainly with Great Britain, the United States, France, and Germany. The leading exports are coffee, rubber, sugar, cotton, hides, and tobacco. The imports, in the order of their value, are cotton goods, wines and spirits, preserved meats and fish, woolen goods, iron and steel goods, coal, and manufactures of leather. Most of the foodstuffs are imported from the United States; and most of the cotton goods and iron and steel manufactures, from England.

The value of the exports from Brazil to the United States in 1890 was $59,000,000. Of this amount $45,000,000 was of coffee. Other items were rubber and other gums to the value of $9,000,000, and sugar to the value of $1,600,000. In the same year Brazil imported from the United States products to the value of $12,000,000, the great items being wheat and flour, lard, kerosene, railway cars and locomotives, and machinery.

Rio de Janeiro, the capital of Brazil, situated on the Atlantic coast, is the principal seaport of the republic. It has an excellent harbor and a great shipping trade. More than half the coffee exported from Brazil is shipped here, for which reason it is commonly spoken of as "Rio" coffee. The city is as large as Baltimore.

Pernambuco (or **Recife**, Portuguese for "the Reef"), a seaport at the most eastern point of the Atlantic coast, exports large quantities of sugar and cotton. This city, because of its numerous canals, is sometimes called the "Venice of America." It is nearly as large as Milwaukee. Pernambuco has submarine cable communication with Lisbon.

Bahia, in the coast state of the same name, is the third city in population and an important seaport. It is situated on the Bay of All Saints. It has an extensive export trade in the chief products of the state, which are sugar, tobacco, cotton, coffee, cocoa, and fruits. The city is about the size of Richmond.

Para (or **Belem**), the most important seaport of the north, is situated near one of the mouths of the great river Amazon. As the center of all the export and import trade of the Amazon valley, it has a very great shipping commerce with the United States and Europe. Rubber is the principal export. The annual shipments of this product from Para exceed 30,000,000 pounds (see page 69). Other exports are cocoa, Brazil-nuts, vanilla, cabinet woods, skins, and feathers. Para is about as large as Atlanta.

Almost all of the foreign commerce of Brazil is carried on by sea. There are more than forty good harbors on the coast line. The most important, besides those just named, are Maranham, Santos, Rio Grande do Sul, and St. Catharine. British ships do a great part of the carrying trade to and from Brazil. There are three lines of English steamers, one German line, and one American line trading to Brazilian ports. An English line brings rubber to New York from Manaos on the upper Amazon, and there is a direct line of steamers between Liverpool and Para.

II. VENEZUELA.—Venezuela borders on the Caribbean Sea. Colombia is on the west of it, Brazil on the south, and British Guiana on the east.

The coast of Venezuela was discovered by Columbus in 1498. In the following year Amerigo Vespucci entered Lake Maracaybo; and finding an Indian village built on piles to prevent inundation, he gave it the name Venezuela, or "Little Venice." This subsequently became the name of the whole country.

The **area** is nearly three times that of France, and the **population** somewhat greater than that of Massachusetts. One-seventh of the people are of native Indian races.

The **government** is a federal republic, with a Congress constituted as in the United States, but the system of electing the President is very different from ours. Every second year the Congress elects out of its own body a Federal Council of seventeen members, and this Council chooses from its own number a President and a Vice-President. They hold office for two years.

The **climate** is varied. Two branches of the Andes traverse the country. In the coast districts the temperature is tropical; in the highlands, between 2000 and 7000 feet above the sea, it is cool and delightful; on the mountain tops there is perpetual snow. There are only two seasons — summer and winter, the latter being a rainy season. The trees retain their verdure, and fruits are produced throughout the year.

The wealth of the country depends chiefly on **agriculture.** The most valuable products are coffee and cocoa. The value of the annual export of coffee is estimated at $12,000,000, and that of cocoa at $3,000,000. About three-fourths of the coffee come to the United States.

More than half the area is covered with **forests**, which supply valuable cabinet woods, besides dyewoods and rubber.

One-third of the area of the country is pasture land, and millions of **cattle** and **sheep** are herded on the vast plains in the basin of the Orinoco. Great numbers of **swine, horses,** and **mules** are also raised.

The plains of the Orinoco basin, called *llanos*, are covered partly with tall, luxuriant grass, and partly with sand. They resemble the *pampas* of the Plate River basin.

Venezuela has great wealth in **minerals,** though but a small part of it has yet been touched by the hand of man. The gold fields are among the richest in the world. Coal exists in considerable quantities, and there are rich deposits of silver, copper, iron, lead, tin, and salt. The annual value of the output of minerals is about $11,000,000.

The **manufactures** of Venezuela are few, and consist almost wholly of hand-made household wares.

Political revolutions and disturbances which, within the last thirty years, have been frequent in Venezuela, as well as in several other South American countries, have much retarded the development of the resources of the country. Progress has also been checked by government monopolies granted upon certain native products, and upon the right of navigation on Lake Maracaybo.

Internal communication is, to a considerable extent, provided for by navigable rivers. Most of the country lies in the basin of the Orinoco, one of the great rivers of South America. It is navigable for more than 700 miles above the delta, and has many tributaries also navigable. There are about 300 miles of railways in operation, and several important lines are now constructing by American, English, and German companies. These new facilities for communication are giving much impetus to the industries and trade of the interior.

As a result of the increased development of its natural resources, the **foreign commerce** of the republic has greatly advanced within recent years. Most of the trade is with the United States, France, Great Britain, and Germany. In 1880 the value of the export and import trade with the United States was about $8,000,000. In 1890 it had reached $15,000,000. The value of the exports from the United States to Venezuela in the latter year was $4,000,000, the chief items being food-stuffs and manufactures of cotton, iron, and steel. In the same year the United States imported from Venezuela merchandise to the value of $11,000,000, the principal items being coffee, hides and skins, and cocoa.

Carácas, the capital, is situated about sixteen miles inland from the Caribbean coast. It is the principal cocoa market. The city is somewhat larger than Memphis. *La Guayra* is the port of Carácas, with which it is connected by rail.

Maracaybo, situated on the gulf or "lake" of the same name, which is an arm of the Caribbean Sea, is the principal seaport of the republic. It is about half as large as Carácas.

Valencia, on the coast, eighty miles west of Carácas, is a considerable trading city, about half the size of Lowell. It is the chief coffee port.

III. THE ARGENTINE REPUBLIC. — The Argentine Republic, sometimes called "Argentina," covers the southeastern portion of the South American continent. It is separated from Chile by the Andes mountain-chain on the west. It is bordered on the north by Bolivia, and on the east by Paraguay, Brazil, Uruguay, and the Atlantic Ocean. The Republic includes the most of Patagonia and a part of the archipelago of Tierra del Fuego at the extreme south. These islands are thinly inhabited by uncivilized Indian tribes.

In **area** this Republic is about one-third as great as the United States. Its **population** is a little more than 4,000,000.

During the last ten years nearly 1,000,000 immigrants from Europe, mostly from Italy, France, and Spain, have settled in the Argentine Republic, and the immigration still continues. Many Jews from Western Russia are also being colonized in this country.

The **government** is a federal republic. Legislative authority is vested in a Federal Congress, constituted and elected on the system of the United States. The President holds office for six years.

Owing to its extent in latitude, the country has great diversities of **climate**. The **soil** is in many parts, especially in the northern settlements, very fertile and productive. The notable feature of Argentina is the great plains that extend over three-fourths of the area. These plains are capable of producing wheat, corn, and other cereals far in excess of home needs. The cultivated lands aggregate as yet but little more than one per cent of the total area of the country.

Wheat is one of the chief **agricultural products**. Only a few years ago much of the wheat used in the Republic was imported. It is now an article of export; and in this trade, as well as in the export of other field products, the Argentine Republic enters into competition with the United States. Sugar is another considerable crop. Nearly enough is raised to supply the home market.

Among the undeveloped resources of the country are the vast **forests** containing choice cabinet and other woods.

The raising of **cattle** and **sheep** is the principal industry. Except in a few of the provinces, the Argentine Republic is a pastoral country. Sheep-ranges cover a vast area. In 1888 the stock of sheep was estimated at 70,000,000, and in the same year there were nearly 23,000,000 oxen and 4,000,000 horses.

The great plains of the Argentine Republic are called *pampas*. They cover an area twice as large as Texas. The value of the Patagonian country for raising both grain and cattle has been shown by exploration, while the further north settlers go, the more fertile the soil is found to be.

The mining districts are in the northwest. Among the **minerals** known to exist are silver, copper, gold, coal, salt, and sulphur. The coal deposit is believed to be sufficient for home needs. Few of the minerals have been worked.

There are 7000 miles of **railways**. The principal cities of the Republic are connected by rail with Buenos Ayres, the capital. The line, nearly completed, from that city across the Andes range to Valparaiso in Chile, will be one of the great trunk lines of the world, and of immense commercial advantage by saving the long and dangerous voyage of 2000 miles round Cape Horn.

The **foreign commerce** of the Republic is chiefly with Great Britain, France, Germany, and Belgium. The exports to these countries are hides and skins, wool, hair, tallow, and wheat. Manufactured goods of nearly every description are imported from Europe and the United States.

In 1890 we exported to the Republic wood and manufactures of wood, iron and steel manufactures, agricultural implements, kerosene, and street and railway cars, and other articles to the total value of $9,000,000.

Our imports from the Republic in the same year amounted in value to $5,000,000, the chief items being hides and skins, wool and hair.

Large quantities of jerked beef are sold to Brazil and other adjacent countries. In recent years the commerce of the Republic has more than doubled. The value of the total exports in 1890 was $105,000,000, and of the total imports, $149,000,000.

The natural advantages of the Argentine Republic are very great, and there are abundant indications of its future prosperity. No other country of the Western Hemisphere gives such promise of being able to compete with our own in the business life of the world. It has many natural resources like those of the United States; and Paraguay, which is a feeder and tributary to the Argentine Republic, has a large area capable of supplying in abundance sugar, cotton, rice, and other semi-tropical staples.

Buenos Ayres, the capital and principal port, is situated on an estuary of the River Plate, about 100 miles from the open sea. It is the most progressive of the cities of South America, and is the center of two-thirds of the foreign commerce of the Republic. More than twenty steamship lines connect it with the principal ports of Europe. The city is somewhat larger than St. Louis.

Nearly opposite Buenos Ayres, on the other side of the estuary, is *Montevideo*, the capital and chief city of Uruguay. Though more advantageously situated than Buenos Ayres, it is commercially much less important. The river at this point is nearly 40 miles wide, and the distance to Montevideo is 125 miles. By means of a submerged cable there is telephonic communication between the two cities. From the salubrious atmosphere of Buenos Ayres and its vicinity, the city derives its name, which is Spanish for "good airs."

La Plata (founded in 1884) is the new capital of the province of Buenos Ayres. It is already as large as Grand Rapids. It is situated on the estuary of the Plate, about forty miles south of the city of Buenos Ayres, with which it is connected by rail.

Rio de la Plata, "River of Silver," and *Argentine*, "silvery," are names due to the error of Cabot and other explorers in supposing this region to be rich in silver.

IV. COLOMBIA. — Colombia occupies the northwestern portion of the South American continent, and includes the Panama Isthmus as far north as the boundary of Costa Rica. The Caribbean Sea is on the north of it, Venezuela on the east, Ecuador on the south, and the Pacific Ocean on the west.

The **area** is three times that of California, and the **population** is about equal to that of the state of Illinois. More than 200,000 of the inhabitants are uncivilized Indians.

Within the last half century this country has had several political revolutions. The latest, that of 1885, resulted in a **federal constitution**, with a Congress consisting of a Senate and a House of Representatives.

Three great ranges of the Andes intersect the country, and the **climate** varies with the elevation. In the coast districts there is great heat, and here the vegetation is tropical. On the mountain slopes the products of the temperate zones grow to perfection.

The **soil** is generally fertile; but only a small portion is under cultivation, owing chiefly to the lack of facilities for transportation. Agriculture is, however, the prevailing industry. Coffee is extensively grown. Other products are tobacco, cocoa, bananas, cereals, vegetable-ivory, and indigo.

The **forests** supply an abundance of mahogany and cedar, fustic and other dyewoods, and medicinal plants.

Colombia is rich in **minerals**, though these are as yet but little developed. Gold and silver abound. There are also deposits of copper, iron, lead, platinum, and coal.

In the central districts **cattle** are extensively raised. According to the latest official reports, there are in the country nearly a million head of these animals.

The inadequate system of **internal communication** is the principal hindrance to the development of the **industrial** resources of Colombia. Owing to the mountainous nature of the country and the want of good roads, commerce in the interior is difficult and expensive. Nearly all merchandise must be transported by pack-animals as soon as it leaves the great rivers. The roads are nothing more than mule tracks, and there are less than 300 miles of railway. The principal means of communication between the interior and the sea is the Magdalena River, which is navigable by steamers.

The value of the total **foreign commerce,** not including the trade at the ports of the Isthmus of Panama, is $20,000,000 annually. It is mostly with France, Great Britain, and the United States.

In 1890 the United States exported to Colombia merchandise to the value of $3,500,000, and imported from that country products of about the same value. Our largest exports were iron and steel manufactures and foodstuffs; and our imports, coffee, hides, and fruits.

Far more valuable to Colombia than her direct foreign commerce is the transit trade (passing through the two ports of Panama and Colon) over the Panama Railway. In 1889 the through traffic was nearly 200,000 tons. It is here, and following mainly the line of the Panama Railway, that the futile and ruinous scheme of an interoceanic canal, projected under French auspices, reached its disastrous termination in 1888.

Bogota, the capital and metropolis, is situated in the interior on a plateau 9000 feet above the sea. Owing to its elevation it is a healthful city, though but a few hundred miles distant from the equator. Lying on the best route between Quito (the capital of Ecuador) and the Caribbean Sea, it occupies a commanding position in relation to commerce; while by navigable tributaries of the Orinoco and the Magdalena, it has access to tide-water. Coal and salt mines have been developed in the neighborhood. The district also contains deposits of gold, silver, and copper. Bogota is somewhat larger than Indianapolis.

Panama, the principal seaport, is the Pacific terminus of the Panama Railway. Besides the important transit traffic between the Atlantic and the Pacific, it has considerable trade with Europe in pearls, mother-of-pearl, and gold-dust obtained in the vicinity. It is about half the size of Troy.

Colon (Spanish for Columbus) is the Atlantic terminus of the Panama Railway.

Barranquilla, on the Magdalena River, is an important commercial city. Nearly all the foreign trade of Colombia passes through it. It is connected by rail with the seaport of *Savanilla,* twenty miles distant.

V. CHILE.— Chile is the strip of country extending from the southern boundary of Peru to Cape Horn, having the Andes Mountains on the east and the Pacific Ocean on the west. It is about 2500 miles in length, while its greatest breadth does not exceed 200 miles.

The great mountain-chain of the Andes extends, in a direction nearly parallel with the Pacific, almost the entire length of the South American continent. This mountain-system is about 4500 miles long. The belt of land which lies between the Andes and the sea has an average breadth of 70 or 80 miles.

The **area** of Chile is about double that of California. The **population,** unlike that of other South American countries, is largely of European descent. There are about 3,000,000 inhabitants, of whom only 50,000 are Indians.

The **government** is a republic, with a national Congress composed of two houses elected by the people. The President is chosen by delegates, elected by ballot, from the several provinces.

Owing to its situation, the country has many varieties of **climate,** from the intense heat of the tropical region in the north to the perpetual winter of Cape Horn. A large area is unproductive; but in the central districts, where the agriculture of Chile is mainly carried on, the **soil** is fertile, and yields abundant crops. The southern districts are thinly inhabited and covered with forests. Among the **agricultural products** are wheat, which is an important crop, and fruits of various kinds. The grape is largely grown, the annual yield of wine being nearly 25 million gallons. The grapes and figs of Coquimbo are highly esteemed. There is a busy export trade in wheat.

The **minerals** include gold, silver, copper, and coal, and these are considerably worked. The deposits of copper are believed to be almost inexhaustible. Iron and **coal** are the important minerals of the south; **copper** and silver of the central provinces. The north is rich in niter and guano. Only a small quantity of potassium nitrate is found in Chile, the deposits consisting chiefly of sodium nitrate. These are commercially spoken of as **nitrates**. **Guano** is found in immense quantities on the western coast and adjacent islands, where the climate is dry and rainless. The coal deposits are very rich, and Chile supplies this fuel to many of the other South American republics.

But for its wealth of guano and niter, and for its mountain mines of gold, silver, and copper, northern Chile would be almost uninhabited.

Grazing is a very great interest. The annual stock is about 2,000,000 **sheep** and **goats** and 500,000 **cattle**. There is a considerable export of wool, and of hides and skins.

Manufacturing in metals has not been much developed. There are a number of flour-mills, sugar-refineries, and woolen and paper mills. Factory industries are, however, on the increase. Inducements are offered by the government for the establishment of such branches of manufacture as are not already in existence in the country.

Chile has liberal **immigration** laws, and is one of the most energetic states of South America. By her war with Peru and Bolivia, she added largely to her territory and wealth. The civil war of 1891 was, however, a hindrance to the growth of the country.

There are about 1700 miles of **railway** open for traffic, and additional lines are now constructing. The Biobio, the only river of any consequence, is navigable by small steamers for about 100 miles.

The yearly value of the total **foreign commerce** is $120,000,000, the exports and imports nearly balancing each other. Great Britain has most of the trade. The staple exports of Chile are nitrates, copper, wheat, wool, and silver ore. The principal imports are foodstuffs and manufactures of cotton, wool, and iron.

The United States imported from Chile, in 1890, products to the value of $3,000,000, and sold to Chile in exchange manufactures to about the same value. Two-thirds of our purchases from Chile in that year were nitrate of soda.

Santiago, the capital, is as large as Buffalo. It is situated at the foot of the Andes, ninety miles from the sea.

Valparaiso is the port of Santiago, and the principal seaport of the country. It is built at the side of a steep cliff, which forms a crescent about the bay. The business part of the city lies along the shore. It is nearly as large as Louisville. Valparaiso is connected with Santiago by rail.

Iquique is an important seaport in the north. The "nitrates" are shipped at this point.

British, German, and French lines of steamers trade from the ports of Chile to Europe through the Strait of Magellan.

VI. URUGUAY.— Uruguay lies south of Brazil. It is bounded on the west by the Argentine Republic, and on the east by the Atlantic Ocean.

This is the smallest of the South American republics. Its **area** is twice that of Indiana, and its **population** is about equal to that of Maine.

Seven-tenths of the inhabitants are native-born, chiefly descendants of the original Spanish settlers. The remainder are mostly recent immigrants from Europe. There are but few inhabitants of Indian blood.

The **government** is a federal republic, with Congress and President having powers and functions similar to those of our own national legislature and executive.

The **climate** is mild. Rain falls abundantly in winter, but is rare in summer. The surface of the country is a vast grassy plain, diversified in the interior by low hills. The **soil** is capable of great agricultural development. Almost all the area is well watered and productive. Indian corn, wheat, tobacco, the olive, and the grape are cultivated. The forests yield a large supply of useful timber.

The rearing of **cattle** and **sheep** is the chief industry. Compared with the immense extent of the pasture lands, only a small part of the country is under cultivation. Vast herds of cattle, sheep, and horses graze upon the wide plains. The wool of the Uruguayan sheep is of excellent quality.

Uruguay has no great **mineral wealth.** In the northern districts a few mines are worked; and gold, silver, copper, lead, and lignite-coal are found. There are also quarries which produce several varieties of marble.

The country has hardly any **manufactures** of textile fabrics or metals. Beef and the extract of meat are prepared in large amount for export. On the Uruguay River an extensive establishment carrying on this business utilizes a million head of cattle annually.

Though the development of manufactures has thus far had scarcely a beginning, the country, owing to its natural advantages of climate, soil, and situation, has a promising future. The great River Plate, with its tributaries, drains an area of more than a million square miles. The tide from the Atlantic extends 250 miles into the interior, and for 1000 miles the river is navigable for large steamers. There are 400 miles of railways in operation, and 250 miles more are now constructing.

Uruguay is very favorably situated for commerce by water, having more than 600 miles of water-front on the Atlantic Ocean and the Uruguay and Plate rivers. The progress of the country has been much hindered by internal discords.

Most of the **foreign commerce** is with Great Britain, France, Germany, Brazil, and our own country. The yearly value of the total exports and imports is between forty and fifty million dollars. Wool, hides and skins, tallow, and preserved meats are the principal exports. Foodstuffs, clothing materials, and machinery are the leading articles imported in exchange.

The United States buys from Uruguay merchandise to the value of $2,000,000 annually, and sells to that country goods to the value of about $3,000,000. Our imports are hides, wool, and hair; our exports are kerosene and manufactures of wood and iron.

Montevideo is the capital and largest city. It is situated on the estuary of the River Plate, which at this point is 65 miles wide. The harbor is the best south of Rio de Janeiro. Most of the trade of the country passes through Montevideo. It has steamship communication with the United States, Rio de Janeiro, and Great Britain. The city is about twice the size of Syracuse.

VII. PERU. — Peru is situated on the Pacific coast. It has Ecuador on the north, Brazil and Bolivia on the east, and Chile on the south.

The **area** is ten times as great as that of Mississippi. The **population** numbers 2,600,000, besides about 350,000 uncivilized Indians.

It is estimated that 57 per cent of the population are Indians; that 23 per cent belong to mixed races, and that only one-fifth of the people are of Spanish descent.

The **government** is a republic, modeled after that of the United States.

Peru is traversed by two branches of the Andes, known as the East and West Cordilleras, dividing the country into three regions, — the coast, the *sierra*, and the *montana*. The *sierra* is the region between the Cordilleras. It includes high plateaus and fertile valleys. The *montana*, which lies between the eastern Cordillera and Brazil, forms more than two-thirds of the total area of the country. In this region and in the *sierra* valleys, the **soil** is very fertile. The coast districts are, to a considerable extent, sandy wastes. As in nearly all the mountain regions of South America, the **climate** of Peru varies with elevation, from tropical heat to perpetual snow.

The **agricultural products** are sugar, cotton, rice, and coffee, besides cereals, fruits, and vegetables. The potato is in many districts the principal food of the people. The cocoa of Peru is highly esteemed. The forests of the *montana* supply Peruvian-bark, rubber, and sarsaparilla.

The **mineral resources** are great and varied. They include silver, for which Peru is famous, niter, gold, coal, gypsum, and sulphur, besides petroleum, now mined in great quantities near Payta.

The war with Chile (1879–80), which resulted disastrously to Peru and Bolivia, was caused by a dispute over the nitrate beds. When the independence of these republics was first obtained, Bolivia had a barren strip of seacoast. When the niter beds were discovered, and their value became known, Chile asserted ownership under an ancient claim. Bolivia and Peru, being allies, the latter defended Bolivia's claim, but without success. Peru was bankrupted by this war.

The **foreign commerce** of the country is mainly with Great Britain. The exports include niter, sugar, alpaca-wool, guano, Peruvian-bark, hides and skins, and silver and copper ores. The imports are almost wholly of manufactured goods, factory industries having gained as yet no foothold in Peru. The annual value of the total exports and imports of Peru is about $20,000,000.

Only a small trade is carried on between Peru and the United States. The value of our sales to Peru in 1890 was about $1,000,000, the chief items being iron manufactures and provisions. Our purchases were even less in value, and consisted mainly of nitrates, hides, and chemicals.

Lima, near the Pacific coast, is the capital and the chief center of trade. It is somewhat larger than Albany. *Callao* is the port of Lima, with which it is connected by rail.

At **Arequipa** in the Andes, 8000 feet above sea-level, is the astronomical observatory established by Harvard University.

The submarine cable extending along the west coast of South America has stations at Payta, Callao, Lima, and Mollendo, thus bringing Peru into direct communication with the telegraph systems of the world.

VIII. ECUADOR. — Ecuador (Spanish for *equator*) has Colombia on the north, Colombia and Peru on the east, Peru on the south, and the Pacific Ocean on the west. It is, as the name denotes, an equatorial country.

The **area** is somewhat greater than that of Nevada, and the **population** is nearly equal to that of Mississippi.

More than half the inhabitants are Indians, 200,000 of them uncivilized. The whites number not more than 100,000.

As in the neighboring republics, the **government** is formed after the model of our own.

The **soil** and **climate** vary with the elevation of the country. On the coast the heat is intense. On the plateaus, enclosed by ranges of the Andes, the temperature is lower. Perpetual snow is reached at the height of 11,000 feet.

The country is rich in **natural resources**, but agriculture is in a backward condition; and owing to the lack of transportation facilities, the great mineral wealth of Ecuador is but little developed.

The roads are poor. Merchandise is transported by pack-animals. There are two short railways from the coast to the interior. Cocoa is the staple product. In the lowlands, rice and tropical fruits are grown; on the plains, cotton and sugar flourish; and in the highlands, wheat, barley, and other cereals are produced. The forests are extensive.

The **minerals** include gold, silver, lead, iron, and copper, but none of the deposits are much worked.

At *Quito* there are **manufactures** of gold lace and filigree work; and at *Guayaquil* "Panama" hats, cordage, mats, sackcloth, and hammocks are produced. Panama merchants formerly controlled the sale of the hats so called, hence the name. The hammocks are made from the fiber of the maguey, a species of the agave.

The total value of the **foreign commerce**, which is chiefly with Great Britain and France, is about $14,000,000 annually. Cocoa heads the list of exports. Other items are gold and silver, coffee, rubber, hides, and straw hats. Cotton goods, provisions, and iron-ware are the staple imports.

The United States sold to Ecuador, in 1890, manufactures to the value of three-quarters of a million dollars, and bought from that country various products of two-thirds that value.

Quito, the capital and largest city, is situated nearly on the equator and at an elevation of 10,000 feet. It is about the size of Evansville.

Guayaquil, on the gulf of the same name, is the principal seaport. Most of the products sent to foreign countries are shipped here.

IX. BOLIVIA. — Bolivia is an inland country. It has the Argentine Republic and Paraguay on the south, Brazil on the east and north, and Chile and Peru on the west.

Bolivia was so named in honor of Simon Bolivar, the great leader of the movement which in the first quarter of the present century resulted in liberating the Spanish colonies in South America from the control of Spain.

The **area** is more than twice that of Texas. The **population** is estimated at two millions, of whom half are Indians.

The **government** is a republic, with President and Congress elected by the people.

Like other regions traversed by the Andes, Bolivia has marked diversities of **soil, climate**, and **products**. Till within the last few years the vast agricultural and mineral resources of the country were almost entirely undeveloped, owing to the lack of means of communication. More recently progress has been made in the construction of roads and railways. The vegetation is rich and varied. The forests yield abundant supplies of cabinet, dye, and building woods. Bolivian rubber is of the finest quality. Cocoa, cinchona, coffee, and sugar are other vegetable products.

The country is rich in **minerals**. Gold and silver to the value of $15,000,000 are annually mined. It is estimated that the famous silver mines of Potosi have yielded ores to the value of $2,000,000,000 since their discovery, though the methods of mining have been very primitive. Tin, lead, iron, mercury, zinc, coal, salt, and sulphur are produced, besides various kinds of precious stones and marbles.

The average annual value of the **foreign commerce** of Bolivia is estimated at $15,000,000. Two-thirds of the exports consist of silver. Peruvian-bark, rubber, cocoa, and coffee, besides copper, tin, and other ores, are also exported. The trade is chiefly with England, France, and Germany. The direct trade between the United States and Bolivia is very small.

As a result of the war with Chile (1879–80), Bolivia mortgaged to that country all her coast territory. Recent explorations in the upper waters of the Parana give reason to believe that Bolivia will eventually have communication with the Atlantic by means of tributaries of this river, which are navigable for small steamboats. There is a railway from Mollendo, on the Peruvian coast, to Lake Titicaca; and some Bolivian produce reaches market by this route. Most of the exports are, however, sent abroad by way of Buenos Ayres.

The seat of government changes. In 1893, **Sucre**, a town as large as New Albany, was the official capital. **La Paz** is the largest city. It has a population twice as great as that of Sucre.

X. PARAGUAY.—Paraguay is another inland country. It is completely surrounded by Brazil, the Argentine Republic, and Bolivia.

The **area** is about twice that of Pennsylvania, and the **population** numbers half a million, of whom one-fourth are Indians. The **government** is a republic. Like other South American countries, Paraguay has suffered much through political convulsions, from the results of which it is now slowly recovering.

The **climate** is generally temperate, and the southern portion, though in parts swampy, is one of the most fertile regions of South America. A large part of the northern section is covered with forests which yield many valuable woods.

The **agricultural products** include rice, wheat, and other cereals; cotton, sugar, tobacco, manioc, and *yerba maté.*

Yerba maté, or Paraguay "tea," is made from the dried and powdered leaves of the ilex-tree, a species of holly. It is exported to neighboring countries.

The raising of **sheep, horses**, and **goats** is a notable industry, as large areas of the country are rich pasture lands.

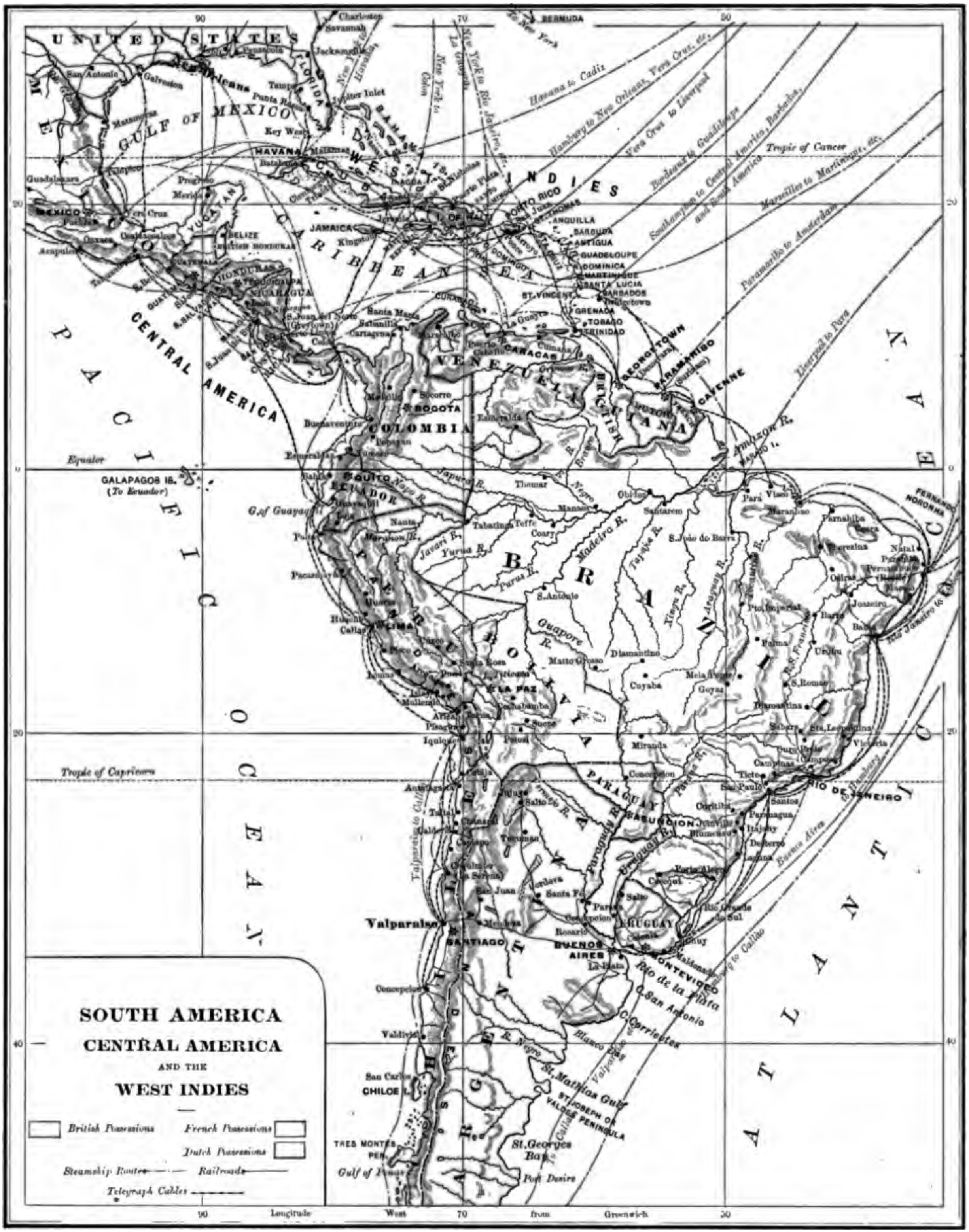
Amongst the **minerals** that have been found are iron and copper, besides clays from which curious and excellent articles of pottery are made.

Manufacturing is but little developed. There are a few sugar and flour mills, soap and match factories, breweries, sawmills, and tanneries.

The **foreign commerce** has a total yearly value of about $4,000,000, and is carried on through the ports of Montevideo and Buenos Ayres. Half the imports are from Great Britain, and consist chiefly of machinery and clothing. The leading exports are Paraguay tea, hides and skins, and tobacco. We have no direct trade with Paraguay.

Asuncion, the capital, situated on the Paraguay River, is as large as Little Rock. **Villa Rica** and **Concepcion** are each about half as large as Asuncion.

Paraguay has many natural advantages and resources. The country needs only development to become commercially important. The great facilities for river navigation are already being largely utilized. New railways are constructing, and colonization is steadily increasing.



SOUTH AMERICA
CENTRAL AMERICA
AND THE
WEST INDIES

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CHAPTER XII

MEXICO, JAPAN, CHINA, AND OTHER COUNTRIES

I. MEXICO. — Mexico is that portion of the North American continent which lies between the United States and Central America. It is bounded on the west and south by the Pacific Ocean, and on the east by the Gulf of Mexico and the Caribbean Sea.

At one time Mexico extended over more than one-fourth of the present territory of the United States. It included the whole of Texas, New Mexico, Arizona, California, Nevada, and Utah, besides parts of Kansas, Oklahoma, Colorado, and Wyoming.

The **area** of Mexico is nearly twelve times that of New England. Its **population** is twice as great as that of New York State.

About 20 per cent of the population are whites. Of the remainder, one-half are Indians and one-half of mixed races. Only a small proportion of the mixed and Indian races can be said to be civilized.

Mexico (officially styled "The United States of Mexico") is a **federal republic,** having a President, and a Congress composed of two houses. It comprises twenty-eight states and one territory, that of Lower California. The President and the Congress are elected by the people.

A great part of the country is within the tropics, but the **climate** depends more upon altitude than upon geographical position. The interior region consists of an extensive plateau formed by an expansion of the Cordilleras of Central America, and varying in elevation from 4000 to 8000 feet. This plateau is intersected by numerous mountain ranges, many of them reaching the altitude of perpetual snow.

The coast districts are distinguished as the *tierras calientes* (hot lands), the plateaus are called the *tierras templades* (temperate lands), and the highlands are styled the *tierras frias* (cold lands).

Owing to these varieties of temperature, and to the natural fertility of the **soil,** nearly every plant that grows in the Torrid and Temperate zones can be raised in Mexico. The development of agriculture has, however, been hindered by deficient irrigation in the plateau regions, and by the system under which vast landed estates have accumulated in the hands of a few.

Except in the coast lands, which have abundant rainfall as well as heavy dews, Mexico is not well supplied with water. There are but few springs, while many of the rivers flow in deep mountain-beds, and have no tributaries. Before the Spanish Conquest, the native Aztec races carried on a successful system of irrigation, but the Spaniards, valuing the country chiefly for its precious metals, gave little attention to agriculture. As a consequence, many tracts became and still remain barren. Large areas of the table-lands are used only for pasture. In most parts of the country the modes of cultivation are still primitive. The Mexican plow is often nothing more than a forked stick, pointed with iron.

The **agricultural products** include nearly all the cereals, the most abundant being Indian corn. This is grown almost everywhere in the country, and furnishes the principal food of the majority of the people. The colder regions produce wheat, barley, and the *maguey*, or agave, from which the national beverage, *pulque*, is prepared. In several of the southern states, especially in Morelos, Vera Cruz, Mexico, and Jalisco, the sugar-cane is cultivated. Cotton is a field crop of somewhat greater value. The cultivation of coffee and tobacco is rapidly extending. Coffee to the value of $3,500,000 was exported to the United States in 1890. Fiber plants are grown in nearly all the states. The best known is Sisal hemp (*heniquen*), cultivated in the peninsula of Yucatan. (See page 65.)

Mexico produces a great variety and abundance of **fruits**, in which there is a considerable export trade. In the coast districts the banana and the orange grow spontaneously. The oranges of Sonora, a northwestern state, bordering on the Gulf of California, are esteemed as among the finest in the markets.

A large area of the country is covered with **forests** which yield valuable gums, spices, and dyestuffs, besides mahogany and cedar.

In the northern area are immense stock ranches, upon which millions of **cattle, sheep,** and **horses** are raised for the home markets and for export. Most of the money invested is furnished by American and English capitalists. An important adjunct of the grazing industry is the export of hides and skins, in which branch of commerce Mexico ranks fourth among nations.

Mexico possesses vast wealth in **minerals.** Though mining enterprises have been active for nearly four centuries, and though enormous quantities of the precious metals have been extracted, the mineral treasures of the country seem still to be inexhaustible. The present annual output of silver is worth $30,000,000, and the yield of other minerals, about $5,000,000. There are nearly 1000 mining enterprises in the country, giving employment to 200,000 men.

The great metalliferous belt extends from the northwestern state of Sonora to the southeastern state of Oaxaca, a distance of 1200 miles. One of the greatest silver states is Zacatecas. The city of the same name is the center of a district in which silver mining has been active for 300 years. Jalisco, a state adjoining Zacatecas, is also a silver-producing region. In Chihuahua, a state bordering upon Texas, there are nearly 600 mines of gold, silver, copper, lead, and salt. The state of Durango contains vast deposits of iron and tin. Puebla yields gold, silver, and iron. Most of the world's supply of the beautiful stone known as "Mexican onyx" is obtained from this state. The peninsula of Lower California is also rich in minerals.

Though coal is known to exist in Mexico, it has not been found in sufficient quantity to encourage the development of **manufactures.** The principal factory industry is the making of cotton cloths. This is carried on chiefly in the states of Puebla, Vera Cruz, Mexico, and Coahuila. There are altogether about one hundred cotton-mills. The value of their annual product is estimated at $13,000,000. Woolen fabrics are made in a few districts. There are also some paper-mills, potteries, and leather and tobacco works. The Mexicans are skillful in the manufacture of articles in leather, particularly saddles. The city of Leon is the center of this industry.

In former times a good deal of **silk** was produced in Mexico. The Spaniards prohibited the culture of the silkworm in their American possessions, the result being that the industry gradually died out. Efforts to revive it are now being made, with some prospects of success.

The commerce of Mexico has largely increased within recent years, owing to the greater stability of the government, and to the extension of **railways.** While the country was in a state of political turmoil and revolution, and while many of the interior towns were connected only by primitive roads, all trading enterprises were carried on in circumstances of difficulty and danger.

In 1877 the only railway in operation was the line from Vera Cruz on the Gulf coast, to the City of Mexico, a distance of about 300 miles. Railways have since been built in different parts of the country. Two important lines, the Mexican Central and the Mexican National, connect the capital with the great trunk lines of the United States, bringing many of the business centers of both countries into direct and speedy communication. The City of Mexico is now but six days' journey by rail from New York. A line which is in course of construction from the Gulf to the Pacific across the Tehuantepec Isthmus will, when completed, greatly stimulate the industry and trade of southern Mexico. The route by this line between New York and San Francisco will be 1500 miles shorter than the Panama route. Altogether, Mexico has about 6000 miles of railways. Of the capital invested in their construction, citizens of the United States have furnished three-fourths.

Mexico has many **rivers** of great length, but they are navigable only for short distances, and for vessels of light draught. Though some of the largest have a course hundreds of miles in length, few are free from rapids which render navigation impracticable.

The **foreign commerce** of Mexico is mainly with the United States, England, France, and Germany. More than half the exports consist of the precious metals, chiefly silver in ore and coin. Other articles of export are Sisal-hemp, coffee, hides and skins, livestock, dyestuffs, and mahogany and other woods. The leading imports are machinery, cotton and woolen fabrics, and house furnishings of various kinds.

Mexico's principal foreign market is the United States, which takes three-fourths of all her exports, except those of the precious metals. In 1890 we purchased from Mexico merchandise to the value of $23,000,000, and sold to that country products to the value of $13,000,000. Our heaviest purchases were of Sisal-hemp, coffee, hides and skins, and drugs and chemicals. Our sales to Mexico were chiefly raw cotton, and manufactures of cotton, wood, iron, and steel.

In the amount of trade with the United States Mexico ranks next after the Netherlands, and this trade is becoming more valuable every year. The increase of our purchases is greater than the increase of Mexican production, showing that the foreign commerce of Mexico is becoming more and more American.

Mexico has no good harbors on the east coast. Most of them are exposed to severe gales which have their origin in the Gulf. Being obstructed with bars and shoals, these harbors do not afford anchorage for ocean-going vessels. On the Pacific coast, however, there are excellent harbors, including those of Guaymas, Mazatlan, San Blas, Manzanillo, and Acapulco.

Mexico, the capital of the republic, is one of the largest and finest of the Spanish-American cities. It is situated in the inland state of the same name, and at an elevation of 7500 feet above the sea. It is about twice the size of Minneapolis. Being the center of the railway system of the country, it has an active home and foreign trade, the latter chiefly through **Vera Cruz**, a town on the Gulf coast.

The City of Mexico is built on the site of the ancient capital of the Aztec empire. The city and the whole country derive their name from that of the Aztec god. *Mexitli.*

Matamoras is a port on the Gulf, near the mouth of the Rio Grande. This place, which before the extension of the railway system was of little consequence, has now a rapidly increasing trade with New Orleans.

Tehuantepec, on the Pacific coast, will become an important center of commerce when the railway across the isthmus is completed.

Guadalajara, an inland city and the capital of the state of Jalisco, is the second in population of the cities of the republic. It has manufactures of cotton and earthenware. It is about the size of Albany.

II. JAPAN. — Japan comprises four large and numerous smaller islands, lying off the east coast of Asia. The Pacific Ocean is on the east of the islands, and between them and the Asiatic mainland is the Sea of Japan.

Hondo, the largest of the islands, is about the size of Kansas. **Yezo,** lying to the north of Hondo, is as large as Indiana. The other two of the large islands, **Shikoku** and **Kiushiu,** are south of Hondo. Taken together, they are nearly as large as West Virginia. The population of the whole country is 40,000,000. Three-fourths of the inhabitants live in the island of Hondo.

Japan is, to a great extent, a mountainous country, and many of the mountains are volcanoes. Destructive earthquakes have often taken place, and slight shocks are of frequent occurrence.

The Japanese call their country *Dai Nippon*, or "Great Japan." Nippon means "sun's origin," referring to the position Japan occupies in the East — the first Asiatic land, as they once supposed, over which the sun rises.

Until quite recently, the **government** of Japan was an absolute monarchy. In 1889 a constitution was promulgated, under which a legislature entitled the Imperial Diet has been established. This body is composed of a House of Peers and a House of Representatives. The latter is elected by the people; the membership of the Upper House being partly elective and partly hereditary. The chief ruler, or emperor, bears in Japan the name of *Kōtei*. In foreign countries he is designated by the ancient title of *Mikado*.

In the northern islands the **climate** is cold. The central island of Hondo has a generally temperate climate, while in Kiushiu and the other southern islands, owing to the Japan Current and the low latitude, the climate is semi-tropical.

The prevailing winds of the Sea of Japan are monsoons. The revolving storms, or cyclones, known as *typhoons*, are peculiar to the Japan and China seas. They occur generally in July, August, or September, and do great damage to property on land, as well as to shipping.

About one-eighth of the area of the country is under cultivation. The leading field crop is **rice,** which forms the chief food of the people, and is the material from which the national beverage, *saké*, is brewed. Rice-fields are to be seen everywhere in the cultivated districts. In the south **tea, sugar,** and the **mulberry** are extensively grown.

The annual product of **tea** is about 55,000,000 pounds. In recent years there has been a great increase in the **sugar** crop. The yield in 1887 was 80,000,000 pounds; in 1890 it was twice as great. About 9,000,000 pounds of **raw silk** are produced annually.

Tea Farm, Japan

Among the other agricultural products are **tobacco, indigo,** and **millet.** The Japanese are skillful and industrious farmers. Their fields are well kept, and most of the tillage is done with spade and hoe.

The **forests** of Japan cover one-third of the area. They supply a great abundance of useful woods, including oak, cedar, pine, maple, and camphor wood. From the bark and twigs of the *paper-mulberry* the Japanese make paper. From the berries of the *vegetable-wax* a beautiful white wax is prepared. This is exported in considerable quantities to Great Britain, where it is used in candle-making.

The **domestic animals** are horses and cattle. The cattle are small but sturdy, and are used only as beasts of draught and burden.

The **mineral wealth** of the country is very great. Mines of silver, copper, iron, coal, and sulphur are extensively worked. Copper is found in nearly all parts of the islands, and is manufactured into various kinds of household articles, besides being exported. Of coal, a million tons are yearly sold abroad, most of it to Bombay. There are numerous deposits of gold, once busily worked, but now somewhat neglected, because the foreign demand for tea, silk, and other Japanese products has raised the wages of labor.

Though Japan cannot be called a great **manufacturing** country, the natives have attained a high degree of excellence in many of the mechanical arts. In the production of numerous small articles of use and ornament, they display a wonderful ingenuity and delicacy of workmanship.

Their superior skill and exquisite taste in lacquer-work have long been so widely recognized that the art has everywhere come to be known as *japanning*. The varnish used by the Japanese in this process is the milky juice of the lacquer, or varnish-tree, found in the northern parts of the country. Porcelains and bronzes of beautiful design and artistic finish are also among the characteristic products of Japanese skill. Silk fabrics are extensively manufactured. Among other industries are the making of paper, glass, and cement.

The **fisheries** give profitable employment to large numbers of people inhabiting the many villages along the coasts. More than 300,000 boats and 800,000 men are wholly or partially employed in this occupation. Cod, lobsters, and oysters abound in the numerous bays. The value of dried fish annually exported exceeds $2,000,000.

Internal communication in Japan has been greatly improved by the extension of railways. Since 1867, 3000 miles of railway have been laid, connecting the chief commercial cities.

River navigation is used in the transport of merchandise from the interior to the coasts. Most of the rivers are short and not very deep. A few of them are fed by tributaries, forming a network of waterways for vessels of light draught. On some of the rivers small steamers ply for short distances, but flat-bottomed boats are most generally used.

The **foreign commerce** of Japan has greatly increased within the last thirty years. In 1867 the value of the exports and imports was about $17,000,000; the present average annual value is five times as great.

Nearly half the total **exports** consists of raw silk. Next in importance is tea, nearly all of which comes to the United States. Coal, copper, silk fabrics, dried fish, rice, drugs and chemicals, porcelains, bronzes, and lacquer-work are the other great items.

The bulk of the **imports** consists of cotton and woolen goods, machinery, sugar, and petroleum.

Most of the foreign trade is with the United States, France, Great Britain, and China, the United States being the largest purchaser from Japan, and Great Britain the largest exporter of goods to Japan.

In 1890 the United States imported from Japan silk, tea, porcelain, and ornamental work, to the value of $21,000,000, and exported petroleum, books, machinery, and other products to the value of $5,000,000.

For several centuries Japan, as well as China, maintained a policy of almost complete isolation. All foreigners were excluded from the country, and no foreign vessels were allowed to touch at Japanese ports. In 1853 Commodore Perry, in command of a squadron of United States war ships, entered the harbor of Yokohama, and in the following year obtained a treaty from the Japanese government, under which two ports were opened for trade, and American consuls permitted to reside in the country. Similar action was afterwards taken by European powers, with the result that most of the principal ports were thrown open to commerce.

Within the last quarter of a century railway, telegraph and telephone lines have been extended throughout the country, a navy of forty vessels has been built, colleges have been founded and opened to the people, and newspapers have been established in every large city.

Tokio, formerly called *Yedo,* the capital of Japan, situated on the east coast of the island of Hondo, has a population nearly as great as that of the City of New York. It exports silk, copper, and lacquer-work, mostly through the port of Yokohama, with which it is connected by rail.

Yokohama, the seaport of Tokio, is seventeen miles distant from that city. It is the greatest commercial port and the principal distributing center of the empire. The population is about equal to that of Providence.

Ozaka, an important mercantile city in the south of Hondo, is the center of a great tea-farming district. The Japanese military arsenal and iron foundries are located here. It is as large as Boston.

Kioto, the ancient capital, is a beautiful city in the island of Hondo. It is the site of a great school of technology. Bronze goods and porcelain are made here.

Nagasaki, in the island of Kiushiu, has one of the finest harbors in the world. The beautiful porcelain, and ornamental work in carved wood and ivory, for which Japan is famous, are largely produced in and near this city. Coal, camphor, and tea are shipped from this port.

Feeding Silkworms, Japan

III. CHINA. — China occupies a vast territory in middle and eastern Asia. It lies south of Siberia, and its coast line of about 2500 miles is washed by the waters of the Pacific.

Besides China Proper, this great country includes the provinces, or dependencies, of Thibet, Mongolia, and Mantchooria. Its **area** is near 4,100,000 square miles, and is much greater than that of Europe. It covers about one-twelfth of the earth's land surface, and its **population,** which is estimated at 350,000,000, is nearly one-fourth of the total population of the globe. China Proper is the southeastern portion of this extensive territory. It comprises little more than one-third of the total area, but contains more than nine-tenths of the population.

The **government** of China is an absolute monarchy. In the administration of public affairs, the emperor is assisted by a council composed of high state officials. The country is divided into eighteen provinces, each having a governor appointed by the emperor.

Competitive examinations form a noteworthy feature of the political system of China. Candidates for employment in the government service are required to qualify themselves by passing literary examinations.

A country of such vast extent must necessarily have great varieties of **soil** and **climate.** In the northern provinces of China the climate and agricultural products are generally the same as those of North Europe. In the central provinces, the richest portion of the country, **tea** and **silk** are the chief products. In the South the climate is tropical. Here are raised vast quantities of **rice**, which is the staple food of the mass of the people. **Sugar** and **tobacco** are cultivated in the central and southern provinces, and in the large island of Formosa, off the east coast. In this island tea is extensively grown, as are also spices and tropical fruits. The **poppy,** from which opium is made, is raised in nearly all of the provinces.

The Chinese hold agriculture in the highest esteem, and every year state ceremonies in its honor are performed by the emperor and the provincial governors. Nearly the whole area of China Proper is arable land, and all of this is skilfully cultivated. The spade is the principal implement of tillage.

The northern dependencies are sparsely peopled, and contain vast areas of forest and of prairie. In the river-basins there are fertile districts, which produce cereals, cotton, hemp, and tobacco. The mountainous province of *Thibet* is famous for its fine wool obtained from the Thibet goat. *Corea,* formerly a province of China, occupies the great eastern peninsula. Hides are the chief export from this dependency.

The principal **minerals** of China are coal, iron, and copper. Probably no country in the world contains such vast deposits of coal. The greater part of the northern province of *Shansi,* having an area as large as New York State, is one vast coal-field. It has been estimated that at the present rate of consumption this province could supply the whole world with coal for thousands of years. Shansi has also extensive mines of iron. In several other provinces coal and iron exist in abundance. Copper-mining has for centuries been an active industry in the southeastern province of *Yunnan.* Beds of kaolin (see page 61) are plentiful, and precious stones are found in many districts.

Silk and porcelain are the best known **manufactures** of China. In the making of porcelain or *china-ware,* appropriately so called, the Chinese were for centuries unrivaled, but their products in this industry are now inferior in quality and finish to those of western countries. The Chinese still maintain their superiority in the manufacture of rich silk fabrics, and in many departments of artistic handicraft. Their carvings in ivory and wood, their antique bronzes, and their filigree-work in gold and silver are universally admired.

The dislike of the Chinese for foreigners, and their aversion to innovation of any kind, have prevented the development of the vast resources of the country. There is but one railroad of any consequence in China, — that from Tientsin to Shanghai, completed in 1894. Attempts have for years been made to introduce a comprehensive system of railways, but till now all such efforts have been frustrated by the opposition of the people.

The **internal trade** of China is of vast extent. It is carried on chiefly by means of the numerous canals and navigable rivers. Two great rivers, each of them thousands of miles in length, — the Hoang-Ho or Yellow River, in the North, and the Yang-tse-Kiang in the South, — traverse the country from west to east.

The **Hoang-Ho**, being for the most part shallow and turbid, is little suitable for navigation. It sometimes alters its course, and frequently overflows its banks, causing great destruction of property and life; hence its name, which means "China's Sorrow."

The basin of the **Yang-tse-Kiang** comprises an area of 750,000 square miles, on which are settled nearly half the population of the country. It is navigable for 1000 miles, and on its banks are several of the greatest cities of China.

Another large river, the **Si Kiang**, in the extreme South, flows into the sea near the City of Canton, whence it is often called the *Canton River*. It is navigable for 150 miles for small vessels.

The **Grand Canal**, though partly fallen into disuse, is an important channel of communication in the coast provinces. It is 700 miles long, and traverses the productive districts lying between Shanghai and Tientsin.

The **foreign commerce** of China is mostly with Great Britain and British colonies.

Silk, raw and manufactured, tea, sugar, and straw-braid are the chief **exports**, tea and silk forming about seven-eighths of the total value. The amount of tea exported in 1890 was 222 million pounds.

The chief **imports** are, in the order of their value, cotton goods, opium, metals, kerosene, and woolen goods. One-half the imports consists of cotton goods, and about one-fifth is opium.

Cotton clothing, padded in the winter season, is much used by the Chinese, few wool-bearing animals being reared in the empire. Hence the large import of cotton goods. The import of opium is diminishing, owing to the increased home cultivation of the poppy.

Our own trade with China is not very large. We purchase tea, silk, and straw-braid, and sell in return cotton and petroleum. The value of our imports from China in 1890 was $16,000,000, and that of our exports was $3,000,000.

"Pigeon" or "Pidjin" English is a grotesque dialect employed as the medium of communication between the Chinese and foreign merchants. It is made up of English, Portuguese, and Hindoostanee. Probably the term "*Pidjin* English" is a corruption of "*Business* English."

Peking, the capital, is situated in the northeast, about 100 miles from the sea. It is nearly as large as New York City, but has hardly any commercial consequence. Though ambassadors from foreign countries are permitted to reside in this city, foreign traders are excluded.

Tientsin, the port of Peking, is a city of about the same size. Being one of the "treaty ports," it has an active foreign commerce. As the northern terminus of the Grand Canal and of the new railway already referred to, it enjoys a great interior trade. This place has also a valuable caravan commerce with European Russia.

Canton, the chief seaport of South China, is about as large as the cities already named. It exports tea, silk, and sugar, and imports cotton and opium. A striking feature of this city is its "boat-town," — a population estimated at 100,000 living in boats or barges moored in rows on the river. Canton has numerous silk and cotton mills.

Until 1842 Canton was the only Chinese port open to foreign trade. There are now twenty-two treaty ports.

Shanghai, on the east coast, near the mouth of the Yang-tse Kiang, is one of the treaty ports, and the first port of the empire in the extent of its foreign commerce. It is also of great importance in inland trade as the principal eastern depot of products in transit between the northern and southern provinces. Shanghai is nearly as large as Boston.

IV. THE HAWAIIAN ISLANDS. — The Hawaiian Islands are situated in the Pacific Ocean, 2100 miles southwest of San Francisco. They lie a little to the south of the Tropic of Cancer. Hawaii, the largest of them, gives its name to the group. Other islands, named in the order of size, are Maui, Oahu, Kauai, and Molokai.

These islands were discovered in 1778 by Captain James Cook, of the British navy, in the course of one of his voyages of discovery. By him they were named "Sandwich Islands," in honor of the Earl of Sandwich. The native name, *Hawaii*, is now generally used to designate the group.

The **area** of these islands is greater than that of Connecticut and Rhode Island taken together. The **population** is less than that of Albany.

The Kanakas (***kanaka*** = a man), as the natives are called, though still proportionately numerous, are rapidly giving way to a new population, chiefly Americans and Portuguese, by whose enterprise and industry the resources of the islands have been developed.

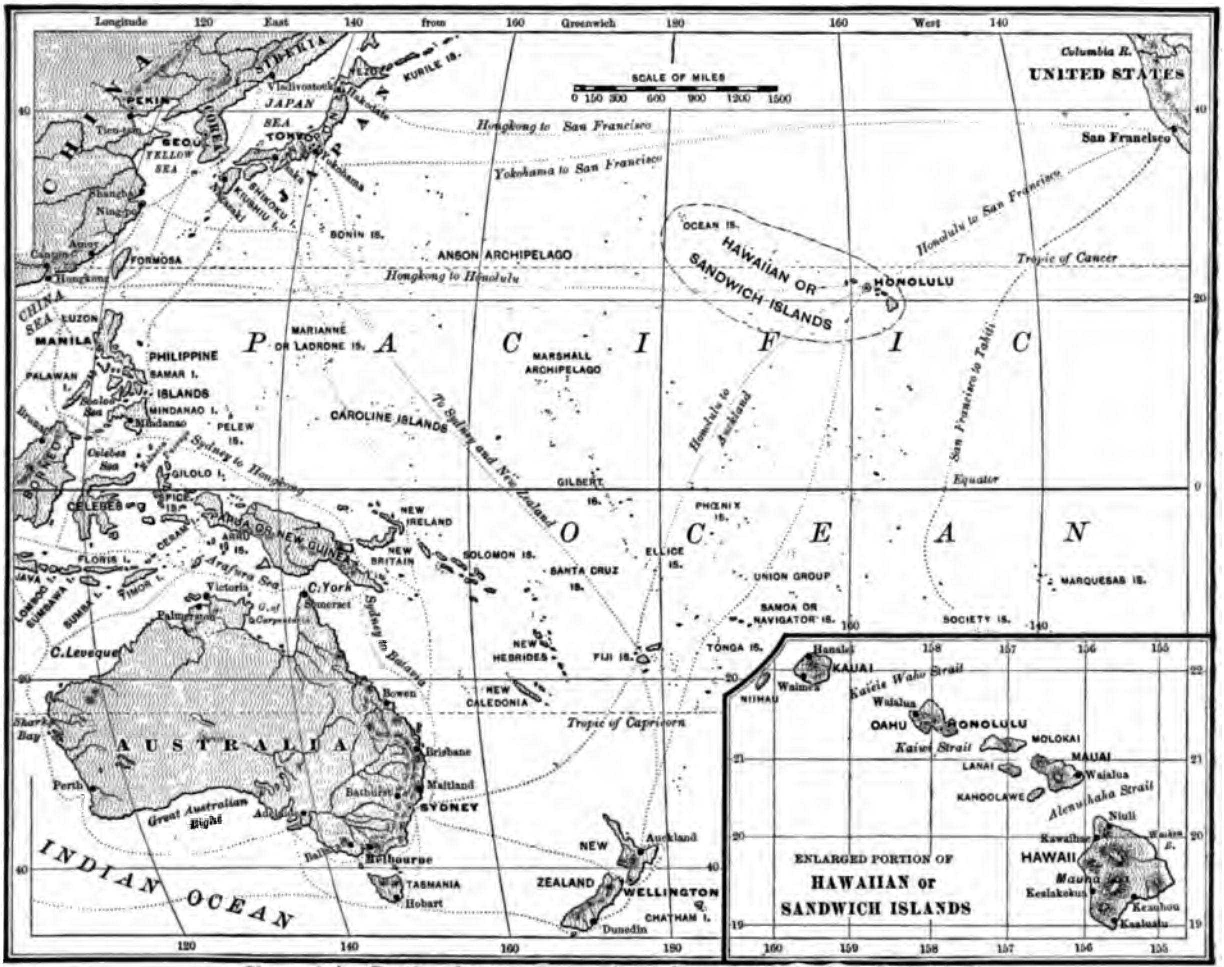


Chart of the Pacific, showing Geographical Situation of the Hawaiian Islands

The provisional government of the Hawaiian Islands, chosen in 1893 to negotiate for annexation to the United States, obtained the necessary legislation by act of Congress, July 7, 1898. The ceremony of raising the flag took place August 12, 1898, and the islands are now a United States colony.

The most notable physical feature of the group is the lofty volcanic mountain *Mauna Loa*, in the island of Hawaii. This mountain is nearly 14,000 feet high. *Kilauea*, a hill in the same island, has the largest crater of any active volcano in the world.

Owing to the cool wind currents from the ocean and the mountains the **climate** is temperate and equable, though the islands are within the tropics.

The fact that there are no extremes of heat or cold in these islands is said to be the reason why there are no words in the native language to express the idea of varieties of weather.

In many parts the **soil** is fertile and productive. Large areas of the uplands are forest-covered, and there are extensive grassy plains which afford good pasturage for cattle and sheep. Sugar and rice are the staple agricultural products. Nearly all of the cultivated area of the islands is owned by Americans.

The annual product of sugar exceeds 250,000,000 pounds, and most of it goes to the refineries of San Francisco. There are some coffee plantations. Bananas are grown and exported. Among other agricultural products are cotton, tobacco, wheat, maize, potatoes, and fruits.

The **foreign commerce** is almost entirely with the United States. Sugar forms nine-tenths of the shipments. Other exports are rice, bananas, hides, and wool. The imports are manufactures and foodstuffs. In 1890 the value of the exports to the United States was $12,000,000, and of the imports from the United States, $5,000,000.

The Hawaiian Islands are commercially the most important of the numerous Pacific groups. They were first opened to the world by Americans engaged in the whale-fisheries. Their present flourishing foreign trade is of quite recent growth. Less than twenty years ago the value of the annual exports from the islands was but $2,000,000.

Honolulu, the capital, situated in the island of Oahu, contains one-fifth of the total population of the group. It is about as large as Racine. The city is lighted by electricity, and has street-car lines, and nearly every family has a telephone.

There are about sixty miles of railway in Hawaii, Maui, and Oahu. A busy inter-island traffic is carried on, in which upwards of forty vessels are constantly engaged. Lines of steamers connect the islands with San Francisco and Auckland.

The island of *Molokai* is exclusively reserved as an asylum for lepers. In the colony here established are about 800 of these unfortunates.

V. THE CENTRAL AMERICAN REPUBLICS. — The Central American Republics of *Guatemala*, *Honduras*, *Salvador*, *Nicaragua*, and *Costa Rica* lie between Mexico and the Isthmus of Panama. The Pacific Ocean is on the west and south, and the Caribbean Sea on the east.

The aggregate **area** of the republics is more than four times that of Pennsylvania. The **population** numbers more than two millions, mostly Indians and half-castes. The majority of the whites are of Spanish origin. Each of the republics has a president and a legislature, chosen by the people.

The Cordilleras, or mountain-chains, of Central America extend almost from sea to sea, forming numerous plateaus having an average elevation of 5000 feet. The **climate** and agricultural products are, in general, the same as those of Mexico. In the coast districts the heat is extreme. The table-lands have perpetual spring. In the mountain regions the climate is cold.

1. **Guatemala**, the northernmost and largest of the republics, is in **area** a little smaller than New York State, and has a **population** of more than a

million. The **chief products** are coffee, cocoa, hides, and valuable woods. Of these coffee is the most important, the value of the coffee export in 1890 being $10,000,000. There are **mines** of gold, silver, lead, tin, and copper; but these are little worked.

The **foreign trade** is mainly with the United States, Great Britain, France, and Germany.

The United States imported from Guatemala in 1890 coffee to the value of nearly $2,000,000, and exported iron, steel, and cotton manufactures, and foodstuffs to the value of about $1,000,000.

New Guatemala, an inland city, is the capital. It is about the size of Troy. *San Jose* and *Champerico* are ports on the Pacific.

The extension of railways, now in progress, promises a considerable increase of the interior and foreign trade of Guatemala.

2. Honduras adjoins Guatemala on the southeast. It is about as large as the State of Mississippi, and has nearly half a million inhabitants.

The chief products and **exports** are cattle, hides, mahogany, rubber, and fruits. The **imports** are mainly cotton and silk goods and hardware. Most of the trade is with the neighboring republics and the United States. In 1890 we imported from Honduras products to the value of $1,000,000, and exported in return goods of half that value.

Tegucigalpa, in a mining region of the interior, is the capital. **Comayagua** is situated in a very fertile inland plain. Both are small towns.

The mineral resources of Honduras are very considerable; but owing to the want of capital and transportation facilities, they have not been much developed.

3. Salvador is the smallest of the republics, but it ranks second in population. Its **area** is about equal to that of the State of New Jersey, and it has 800,000 inhabitants. Its coast line is wholly on the Pacific, Salvador being the only Central American state which does not border on the Caribbean Sea.

Agriculture and **mining** are the principal industries. The chief field-products are coffee, indigo, and sugar. There are deposits of gold, silver, iron, and copper. No less than 180 mines and quarries are in operation.

The value of the **foreign trade** averages $6,000,000 annually, about one-third of it being with the United States. We bought from Salvador in 1890, coffee, sugar, and indigo to the value of $1,500,000, and sold to that country, flour, and manufactures of cotton, wood, and iron of half that value.

San Salvador, the capital, was founded in 1528. Destructive earthquakes and volcanic eruptions have been frequent in the neighborhood. By one of these, which occurred in 1854, the old city was almost totally ruined, and the inhabitants removed to a site near by, to which they gave the name *New San Salvador*. This was partly destroyed by earthquakes and eruptions in 1873, and again in 1879.

4. Nicaragua is in **area** about equal to New York State. Its **population** is less than half as large as that of Brooklyn. It has a coast line on both the Pacific Ocean and the Caribbean Sea.

The **chief products** are coffee, rubber, hides and skins, and bananas. Coffee is the principal export. The imports are manufactured goods and foodstuffs.

The **foreign trade** is not large. In 1890 we bought from Nicaragua coffee, rubber, bananas, and other products to the value of about $1,500,000, and exported to that country manufactures worth $1,000,000.

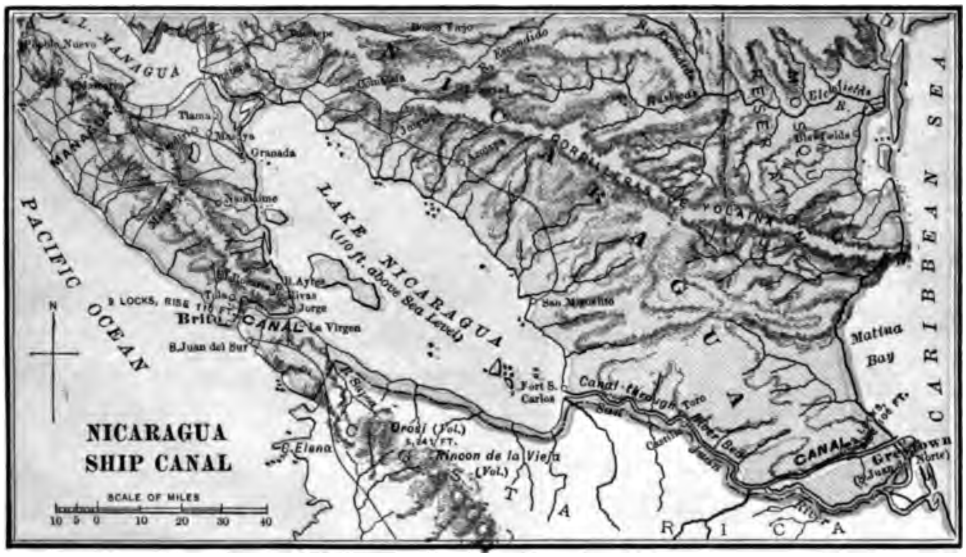
The interior of the country is an extensive and fertile plain, from which numerous rivers flow to the sea, the only navigable one being the San Juan. In a valley not far from the western coast are situated the great lakes, Nicaragua and Managua, more than 100 feet above sea-level.

Leon, the old capital and the largest city of the republic, is situated ten miles from the Pacific coast, with which it is connected by rail. In its vicinity are several active volcanoes, from which the city has frequently suffered.

Managua, on the border of the lake of that name, is the present capital.

coast than to Europe. It will, therefore, secure the bulk of the Pacific trade of both North and South America to the United States.

With the trade-route from the Gulf of Mexico to Japan reduced one-half, our cotton can compete in the markets of that country with the product of India. This great work must, moreover, tend to build up in wealth and population the whole of our western seaboard.



The Nicaragua Canal. — The project of an interoceanic ship canal, which has long been talked of, and which was attempted at the Panama Isthmus by the French engineer, de Lesseps, is now being carried out by an American company at the Isthmus of Nicaragua. The route of the canal is through Nicaraguan territory, from Greytown, on the Caribbean Sea, to Brito, on the Pacific coast.

The length of the route will be 169 miles, of which 28 will be excavated channel, and the remainder through rivers and Lake Nicaragua. Between lake and sea there will be on each side several locks. It is estimated that the total cost of the work will be $100,000,000.

The advantages of this canal to American commerce must be enormous. It will shorten by 10,000 miles the sea-distance between our Atlantic and our Pacific ports, besides bringing the latter almost 3000 miles nearer to our eastern

5. Costa Rica, adjoining the South American republic of Colombia, is in **area** nearly equal to Indiana, but its **population** is less than 300,000. It has a coast line on both the Pacific Ocean and the Caribbean Sea.

Coffee is the principal agricultural product and the greatest export. Bananas, hides and skins, dyewoods, and coin and bullion are other exports.

The total **foreign trade** amounts to more than $10,000,000 annually. It is chiefly with Great Britain, France, Germany, and the United States. The total value of the exchanges with the United States is about $3,000,000 a year.

San Jose, the capital, is an inland town about the size of Taunton.

Limon, on the Caribbean coast, and **Puntarenas**, on the Pacific, are the principal seaports. A railway, nearly completed, will connect these towns with each other.

VI. HAITI. — Haiti is an island of the West Indies, next in size to Cuba. It is about half as large as the State of Florida, and has a population of nearly a million, mostly negroes and mulattoes.

Politically the island is divided into the two republics of **Santo Domingo** and **Haiti**. Each has a president and a legislative assembly.

The country is for the most part mountainous. The **climate** is moderated by sea-breezes, and the **soil**, which is well-watered, is in general fertile. Forests cover the mountain slopes, and yield great quantities of valuable woods, including mahogany, cedar, and logwood. The chief **agricultural products** are coffee, cotton, sugar, cocoa, tobacco, and tropical fruits of various kinds. Agriculture and forestry are the only notable industries.

1. Santo Domingo (officially styled *Republica Dominica*) occupies the eastern portion of the island. In **area** it is twice as large as New Hampshire, and it is somewhat greater in **population** than that state.

The **foreign trade** is mainly with the United States, Spain, England, and France. The staple exports are coffee, cocoa, tobacco, and sugar; the imports are clothing and manufactures of iron. The value of our total exchanges with Santo Domingo is about $3,000,000 annually. In 1890 we imported from the Republic sugar, hides and skins, dyewoods, and coffee; sending back manufactures of iron, steel, and wood, besides cottons and flour.

Santo Domingo, the capital, is about the size of Sacramento. The chief seaport is **Porto Plata**, a place half as large.

2. Haiti, the western portion of the island, is much smaller in **area**, but has a larger **population** than the adjoining republic of Santo Domingo.

In 1890 the **foreign commerce** of Haiti had the value of $35,000,000. The trade is mainly with Great Britain, the United States, France, and Germany, the chief exports being coffee, cocoa, mahogany, logwood, and cotton, and the principal imports being clothing and foodstuffs.

The United States exported to Haiti in 1890 manufactures to the value of $5,000,000, and purchased from that country in the same year coffee, logwood, and cocoa worth $2,000,000.

Port-au-Prince, the capital, is situated on a fine bay and has an excellent harbor. The city is as large as Harrisburg.

The language spoken by the majority of the people in Haiti is a dialect of French. In Santo Domingo the prevailing language is Spanish.

The island has communication by submarine telegraph cables with the United States and Brazil.

VII. ROUMANIA, SERVIA, AND MONTENEGRO. — Lying between European Turkey on the south, and Austria-Hungary and Russia on the north, are the three countries of *Roumania*, *Servia*, and *Montenegro*, named from east to west, and in the order of their areas and populations. All of them once formed part of the Turkish dominions, but they are now independent monarchies. The inhabitants of these kingdoms belong for the most part to the Slavonian race, of which a large portion of the Russian people are members.

1. Roumania has the Black Sea on the east. The Danube River forms most of its southern boundary; one of its tributaries, the Pruth, separates it from Russia; and the delta of this great river is in Roumanian territory. From the Hungarian boundary to the Black Sea, the Danube is free to the ships of all nations.

In both area and population Roumania is approximately equal to the State of Pennsylvania. As its name would suggest, Roumania was once a province of the Roman Empire. It was colonized by the Romans in the time of the Emperor Trajan, and the language of the people is a Latin dialect.

Roumania is a country of small farms and great forests. Wheat and Indian corn are the staple crops. Vineyards and sheep-ranges cover great areas of the country. Foreign trade is mainly with Great Britain, Austria, and France.

Bucharest, the capital and largest city, is about twice the size of Albany.

2. **Servia** adjoins Roumania on the west, having the Danube for its northern boundary, and Turkey on the east and south. It is in population about equal to Michigan, while in area it is only one-third as large as that state.

Servia is an agricultural country, having hardly any manufactures. Its products are similar to those of Roumania. The trade is mostly with Great Britain, Austria, and Turkey. It sells food products and buys clothing.

Belgrade, the capital and chief city, is situated on the Danube. The place is about as large as Lynn. It has considerable trade up and down the river, and is connected by rail with Constantinople and Budapest.

3. **Montenegro** (literally "Black Mountains") is a small mountainous country northwest of Turkey, and bordering in its southern part on the Adriatic Sea. It is about twice as large as Delaware, and has a population estimated at 2,000,000, chiefly engaged in sheep-farming and tillage.

The farm lands are freeholds of a few acres each, and the woods and pastures of the country are the common property of the people.

Cettinjé, a village not far from the sea, is the capital.

VIII. MINOR ASIATIC COUNTRIES. — Countries of Asia that have no great intercourse with the Western World, but which, owing to their size and their increasing civilization, must in time become better known and more important, are (1) Siam, in southeastern Asia, and (2) the countries which occupy the great Plateau of Iran in southwestern Asia.

1. **Siam** is a country about as large as Texas, lying between the British and the French possessions in the peninsula of Indo-China. The population, about half of whom are Chinese and Malays, is estimated to number 6,000,000. The government is a monarchy. There is little settled industry. The mass of the people are in a condition of serfdom to their local governors. There are teak forests in the northern part. Rice is the chief export. The trade of the country is very largely in British hands.

Bangkok, the capital, is situated on the Menam River, about 20 miles from the Gulf of Siam. It is said to have a population of half a million. The city is but little above the level of the river, and is traversed by numerous canals. Most of the people live in squalid poverty. Their wretched hovels are in painful contrast with the royal palaces, and with the European quarter in which are street cars, iron bridges, and substantial buildings.

2. **Persia**, a country about four times as large as California, occupies the western part of the Plateau of Iran. It lies to the east of Turkey, and between the Caspian Sea and the Persian Gulf. A great part of this area is desert. The population is thought to number about 8,000,000. Outside of the towns and villages the people are mainly tent-dwellers, depending on their flocks. The government is an absolute monarchy. The chief ruler is called the Shah.

Persia (from the Greek *Persis*) is a name not used by the people, the native name of the country being *Iran*.

Fruits in great variety, the opium-poppy, tobacco, and the mulberry are cultivated. Silk is chiefly produced in the Caspian provinces. Opium is exported to China and Europe, and wool to Bombay and Marseilles. The hand-made carpets of this country have a world-wide reputation. Goods going to India and China are shipped from the ports of the

Persian Gulf. Trade with Europe is partly from Caspian ports, and partly by caravan.

Teheran, the capital, is situated in the northern part. The city is about as large as Detroit. The only other considerable town is *Tabriz*, in the extreme northwest, near the Caucasian boundary.

3. **Afghanistan** and **Baluchistan** are countries, not well known, occupying the eastern part of the Plateau of Iran, and lying between Persia and British India. There is railway communication through the Bolan Pass with the cities of northern Hindostan.

(a) **Afghanistan** separates Asiatic Russia from British India. The whole country is a lofty plateau. Afghanistan is about half as large as Persia, and has a population estimated at 4,000,000. The Afghans are nominally subjects of the Amir of Kabul, but in fact this warlike people can hardly be said to form a nationality. The country is one of tribes and village clans.

There are no rivers and no good roads. Goods are camel-carried, and trade is mainly with the cities of India by way of the Himalayan passes. There are three considerable cities, — *Kabul*, the capital, *Kandahar*, and *Herat*, — all situated on caravan routes. Silks are produced at all of these places; carpets at Herat: and dried fruits are sent out from Kandahar.

(b) **Baluchistan** lies between Afghanistan and the Arabian Gulf. In both area and population it is approximately equal to the State of Colorado. There is scarcely anything that can be called a government. The lawless Baluchs divide their time between tending their flocks and plundering their neighbors.

In theory the people are subjects of the Khan of Khelat. Of late years the British have encroached upon the country, and have gradually come to speak of it as a "Dependent State." They have similarly brought parts of the Afghan territory into their "sphere of influence," regarding the control of the region south of the Hindoo-Koosh range as necessary to secure British India from possible Russian aggression.

The surface of Baluchistan is elevated and rugged, and except in the valleys, barren and almost waterless. Dried fruits and vegetable dyes are exported to the cities of India.

Khelat, the only considerable town, is the capital. It is situated in the northern part, at a point 7000 feet above sea-level.

Corea is a peninsula lying between the Yellow Sea and the Sea of Japan; and has been a Chinese dependency until its freedom became established in 1895 through the Chino-Japanese war. The resources of Corea are important, but undeveloped. Now coming under the progressive spirit of Japanese influence, it is probable that her ports will soon be opened to commerce, and her industries so encouraged that her people may become more prosperous.

IX. OTHER AFRICAN LANDS.

— As we have already seen, most of the coast countries of Africa are parcelled out among the European powers as colonies and "dependencies." Other areas in this great and half-unknown continent remain to be considered.

1. **Morocco**, in the extreme northwest, is a country supposed to be about equal in both area and population to the State of New York. The inhabitants are mostly Arabs and Berbers. The government is an absolute despotism. The ruler is called the Sultan. Little is known of the interior of the country.

The small foreign trade is chiefly with Great Britain and France, the main exports being pod-crops, wool, olive oil, and the goat-skins from which Morocco leather is prepared. The chief imports are cotton-goods and sugar.

Fez, the capital, is a city about as large as Omaha.

2. Liberia is a country on the west coast of Africa, having a population of about a million, and an area three times as large as Connecticut. It is a republic, and was founded in 1822 by American philanthropists for the settlement of negro freedmen.

Palm products, dyewoods, and spices are exported, chiefly to Europe. Coffee and rubber are now becoming important products. The only town of any consequence is *Monrovia*, the capital, a place about the size of Vicksburg.

The name *Liberia* was appropriately given to a country destined as a home for liberated slaves, and the chief town was named in honor of James Monroe, who was President of the United States at the time the Republic was founded.

3. The South African Republic, sometimes called the Transvaal Republic, is a country as large as the State of Nevada. It lies north of the Orange Free State, from which it is separated by the Vaal River. The white population, who are descendants of the original Dutch settlers of Cape Colony, number about 100,000. The natives are six times as numerous. Though the government is a Republic with a President and a Congress, foreign trade and intercourse are practically controlled by a British "Diplomatic Agent."

Pretoria is the capital. The chief town is *Johannesburg*, situated in the richest gold fields discovered in recent years. The export of gold in 1890 had the value of $9,000,000. The two towns named are connected by railway with Cape Town, nearly 1000 miles distant.

4. The Orange Free State is another republic founded by Dutch settlers from Cape Colony. The Vaal River separates it from the South African Republic, and a branch of the Orange River, from Cape Colony.

In area the Orange Free State is about as large as Louisiana. More than half the total population of 200,000 consists of negroes. The surface of the country is an undulating plateau of great elevation. Sheep-farming is the leading occupation of the people. There are rich coal deposits, and diamonds to the yearly value of $1,000,000 are mined.

The foreign trade of this inland country is carried on through the ports of Cape Colony, with which there is railway communication. The exports are wool, hides, and diamonds; the imports consist mainly of British manufactures.

Bloemfontein, the capital, is a small town in the interior.

5. The Congo Independent State occupies, as the name denotes, that portion of equatorial Africa which lies in the basin of the Congo River. The area is estimated at 900,000 square miles, and there is a population of 17,000,000 of blacks. The State was constituted by an International Conference, in 1885. Belgium has limited rights of sovereignty over parts of this region.

The Congo is navigable for 450 miles from its mouth. Then for 200 miles its course is obstructed by rapids, while above these rapids the river is navigable for 1000 miles further. A railway is now nearly completed from the mouth of the river into the interior. The principal exports are coffee, ivory, palm-products, and rubber.

The capital is *Boma*, a port on the lower river.

6. The Sudan is a vast and little known region, still unannexed by any European power, lying south of the Great Desert of Sahara. It contains several states, called Sultanats, having populations chiefly negro, but including many Arabs.

The greater part of the foreign trade of these states is carried on by caravans, across the desert to the Mediterranean coast. The exports are chiefly ivory, ostrich feathers, and copper, which are bartered for salt, cotton-goods, and various European wares.

SUPPLEMENT

MATHEMATICAL AND PHYSICAL GEOGRAPHY

I. MATHEMATICAL GEOGRAPHY

Mathematical Geography treats of the earth as a planet; of its form and size; of its motions and their results; of the methods of measuring its surface and determining location upon it; and of the ways of representing its surface in whole or in part.

1. THE CIRCLE AND THE SPHERE.— (a) **A circle** is a plane figure bounded by a curved line, every point of which is equally distant from the center.

A circumference of a circle is the curved line that bounds it. The circumference is itself often called a circle.

A diameter *of a circle* is a straight line which passes through its center, and terminates at opposite points of the circumference.

A radius of a circle is a straight line drawn from the center to the circumference.

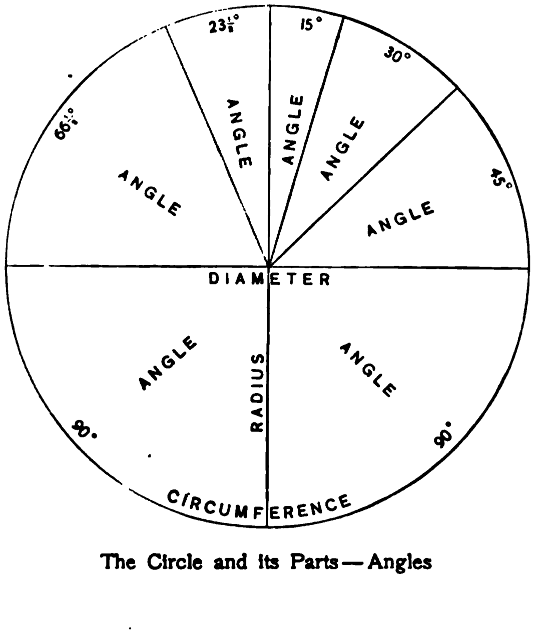
Every circle is divided into 360 equal parts, called *degrees* (°). Degrees are subdivided each into sixty *minutes* ('), and each minute into sixty *seconds* (''), or one thirty-six-hundredth of a degree. One-fourth of the circumference of a circle is an arc of 90°. Such an arc is subtended by a right angle. An angle is measured by the number of degrees in the arc that subtends it.

(b) **A sphere** is a body bounded by a curved surface, every point of which is equally distant from a point within called the center.

A hemisphere is half a sphere.

A diameter *of a sphere* is a straight line passing through its center, and terminated by its surface.

The axis of a sphere is the diameter on which it may be supposed to revolve.



The Circle and its Parts—Angles

The poles of a sphere are the extremities of its axis.

A spheroid is a body nearly spherical.

An oblate spheroid is produced when a spheroid is flattened at the poles.

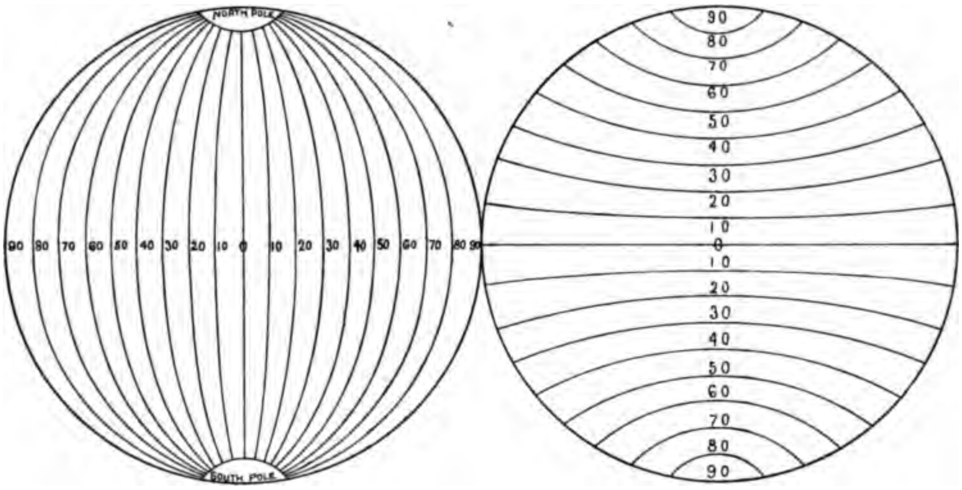
A great circle of the earth is one that divides it into two equal parts.

A small circle is one that divides the earth into two unequal parts.

2. FORM OF THE EARTH. — In shape the earth closely resembles an oblate spheroid. It differs, however, but slightly from a sphere. This has been proved in several ways.

1. Navigators have sailed around it.

2. During a lunar eclipse, when the earth is between the moon and the sun, the shadow that the earth casts upon the moon is always circular.



Parallels and Meridians

3. As a vessel approaches land, the topmast is first seen, then the lower sails, and finally the hull of the vessel.

4. The horizon from every point of view is circular. In ascending from the surface of the earth the horizon constantly enlarges.

5. When a straight line is surveyed upon any plane surface, the earth curves away from the line. Civil engineers, in constructing ditches and canals, must make allowance for this curvature, or at no very great distance excavations would run out at the surface of the earth. At the distance of one mile the curvature is eight inches, at two miles thirty-two inches, at three miles seventy-two inches.

RULE: *Square the distance in miles. Two-thirds of this is the curvature in feet.*

3. SIZE OF THE EARTH. —The **diameter** of the earth is nearly 8000 miles. The polar diameter is about twenty-six miles shorter than the equatorial diameter.

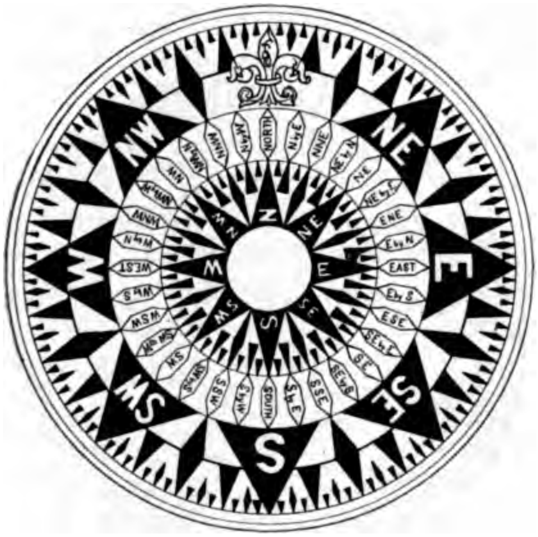
The circumference of the earth is nearly 25,000 miles.

The area of the earth is about 197,000,000 square miles.

4. MOTIONS OF THE EARTH. — The earth has two motions. It rotates on its axis, causing the succession of day and night. This is called the *daily* or *diurnal* motion. The earth, moving in its orbit, or path around the sun, completes a *revolution* in about 365¼ days, a period called a year. This is the earth's *yearly* or *annual* motion.

5. DIRECTIONS ON THE EARTH'S SURFACE. — The earth's axis points to a star called the north or pole star. The pole of the earth nearest this star is the north pole; the opposite pole is the south pole. Every direction on the earth's surface from the north pole is south, and every direction from the south pole is north.

North is the direction along the earth's surface towards the north pole. South is the direction towards the south pole. Facing the north, the direction on the right hand is east; that on the left hand, west. These four points are called the *cardinal points.*



Compass Card, showing the Thirty-two Points

Midway between north and east is northeast; between south and east is southeast; between north and west is northwest; between south and west is southwest. These are called *semi-cardinal points.*

For ascertaining directions at sea an instrument called the *mariner's compass* is used. To "box a compass" is to name its points in order. (See page 14.)

6. CIRCLES OF THE EARTH. — Circles of the earth are imaginary lines extending around it. On maps and globes they are real lines.

The equator is a great circle extending east and west around the earth midway between the poles. It divides the earth into northern and southern hemispheres.

The equator crosses Brazil, Colombia, Ecuador, Celebes, Borneo, Sumatra, Zanzibar, the Congo State, and Lower Guinea. (See *Maps,* pages 140 and 186.)

Parallels are small circles parallel to the equator. They mark distances north and south from the equator.

Meridian circles are great circles passing through the poles of the earth. They are perpendicular to the equator. They mark distances east and west of some meridian taken as a standard.

A meridian is half a meridian circle, and terminates at the poles.

The ecliptic is a great circle passing around the earth, making an angle of 23½° with the equator.

As the earth turns on its axis from west to east, one-half of its surface is always illuminated by the sun. The boundary line of the illuminated portion is called the *circle of illumination,* or *day circle.* It is therefore a great circle, and moves from east to west as the day advances.

The Tropic of Cancer is a small circle 23½° north of the equator.

The Tropic of Capricorn is a small circle 23½° south of the equator.

The Arctic Circle is a small circle 23½° from the north pole.

The Antarctic Circle is a small circle 23½° from the south pole.

The distance of the Arctic and Antarctic circles (polar circles) from the equator is 4605 common miles.

7. LATITUDE AND LONGITUDE. — The location of a place on the earth's surface is determined by its distance from two fixed lines perpendicular to each other. The equator is taken as one of the lines; a standard meridian as the other.

Latitude is distance north or south of the equator, measured in degrees, minutes, and seconds. Places are in north or in south latitude according as they are north or south of the equator. Places on the equator have no latitude.

The length of a degree of latitude varies. The flattening of the earth at the poles causes the length of a degree of latitude steadily to increase as we go from the equator toward the poles.

The length of a degree of latitude varies, therefore, from about 68 to 69 common miles. All places situated on the same parallel have the same length of day.

Longitude is the distance (in degrees, minutes, and seconds) east or west of a standard meridian. Longitude is measured 180° east or west of the prime meridian.

The meridian of Greenwich, near London, England, is the prime meridian from which longitude is now almost always reckoned. The longitude of any place on the prime, or standard, meridian is 0.

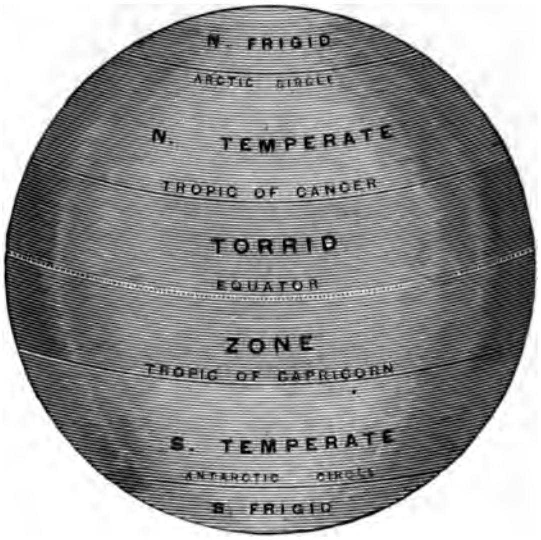
From the equator the degree of longitude becomes steadily shorter all the way to the poles, where there is no longitude. In other words, the meridians converge till they meet at the poles. (See *Diagram*, page 204.)

It will be seen that the spheroidal form of the earth causes the length of a degree of longitude to depend upon the latitude of the place where this length is measured.

A degree of longitude at the equator measures 69.164 miles.

At lat. 5°	68.901 miles	At lat. 55°	39.760 miles
" 10°	68.117 "	" 60°	34.669 "
" 15°	66.821 "	" 65°	29.319 "
" 20°	65.014 "	" 70°	23.725 "
" 25°	62.718 "	" 75°	17.957 "
" 30°	59.947 "	" 80°	12.049 "
" 35°	55.714 "	" 85°	6.048 "
" 40°	53.053 "	" 88°	1.211 "
" 45°	48.982 "	" 90°	0.0 "
" 50°	44.545 "		

8. ZONES. — A zone is a belt or girdle. The tropics and polar circles divide the earth's surface into five zones.



Zones, Zonal Circles, and Equator

The Torrid Zone lies between the tropics. It is 47° wide.

The North Temperate Zone lies between the Tropic of Cancer and the Arctic Circle. It is 43° wide.

The South Temperate Zone lies between the Tropic of Capricorn and the Antarctic Circle. It is 43° wide.

The North Frigid Zone extends from the north pole to the Arctic Circle. It is 23½° wide.

The South Frigid Zone extends from the south pole to the Antarctic Circle. It is 23½° wide.

9. SEASONS. — In each of the Temperate zones there are four seasons, — spring, summer, autumn, and winter. The change of seasons on the earth is caused by the revolution of the earth about the sun, the rotation on its axis, the inclination of the axis to the plane of the ecliptic, and the constant parallelism of the earth's axis to itself; that is, the unchanging *direction* of the axis.

If the earth had motion in its orbit alone, there would be but two seasons, — summer and winter. If the earth's axis were perpendicular to the plane of the ecliptic, there would be no change of seasons. If the earth's axis were in the plane of the ecliptic, there would be two summers and two winters in the equatorial regions, for each passage of the earth throughout its orbit.

The seasons of the Temperate zones are not all of the same length. This is due to the elliptical, or oblong, form of the earth's orbit. The earth is distant from the sun about 93,000,000 miles in summer, and about 90,000,000 miles in winter. In the North Temperate Zone, spring has ninety-three days; summer, ninety-three days; autumn, ninety days; and winter, eighty-nine days.

The summer days increase in length as we go from the equator toward the poles. The following table exhibits the length of the longest day in the different latitudes: —

At the equator	12 hours	Lat. 55°	17.3 hours
Lat. 10°	12.7 "	" 60°	18.7 "
" 20°	13.3 "	At the polar circles	24.0 "
At the Tropics	13.5 "	Lat. 67½°	1 month
Lat. 30°	14.0 "	" 69½°	2 months
" 35°	14.5 "	" 73.3°	3 "
" 40°	15.0 "	" 78.3°	4 "
" 45°	15.6 "	" 84°	5 "
" 50°	16.3 "	At the poles	6 "

10. GLOBES AND MAPS. — The earth's surface is usually represented by globes and maps.

A terrestrial globe is a small sphere, the surface of which represents the surface of the earth.

A map is a representation of the whole or of a part of the earth's surface on a plane.

A map projection is a method of representing the earth's surface on a plane.

Mercator's projection is a method of map-drawing for the use of navigators, to whom the *relative positions* of points on land and sea is of greater importance than the contour of the coast-line. On Mercator's maps the meridians and parallels are represented as at right angles to one another. The Reference Chart at the beginning of this book is drawn on Mercator's projection.

A scale of miles furnishes a unit of comparison for distances as shown on the map, and for the corresponding actual distances on the earth's surface. A scale of miles cannot be used on either a Mercator's projection or an ordinary map of a hemisphere, because such maps are distorted in all parts except along the equator. Most of the maps in atlases are drawn on a conic, polyconic, or Bonne's projection. A scale of miles gives fairly accurate results on any of these.

The parallels of latitude are numbered on the side margins of maps. The meridians of longitude are numbered on the top and bottom margins.

The day conventionally begins at 180° longitude, and this meridian is the one from which every date is reckoned. The first day of the week, Sunday, is reckoned from this meridian. It is Sunday east of the meridian of 180°; it is Monday west of it. In sailing westward a day is lost, and in sailing eastward a day is gained. Navigators, therefore, make the necessary correction to avoid confusion in keeping their log-books. Formerly, an arbitrary line was used, called the Sunday line, or international date line: but its use has been given up by navigators, and that of the exact meridian, the 180th, has been adopted.

QUESTIONS

What is mathematical geography? Name and describe the various parts of a circle. How many degrees in a half circle? — in a quadrant? How many degrees in the arc extending from the horizon half way to the zenith?

Name the various parts of a sphere, and describe them. Which circles of the earth are flattened, and therefore mathematically imperfect? [*Ans.* — All those whose direction is north and south.] Which circles of the earth are perfect circles? [*Ans.* — All those whose direction is east and west.] Which of the east and west circles of the earth is a great circle? [*Ans.* — A great circle of the earth is one that divides it into equal parts. The *equator* is the only east and west circle that does this.] How else may a great circle be defined? [*Ans.* — As any circle in whose plane lies any diameter of the earth.]

What is the form of the earth? How is it known that the earth is spherical? What is the earth's diameter? — its circumference? What is the diurnal motion of the earth? — the annual motion? What is the mariner's compass? What does it show? Name the cardinal points, — the semi-cardinal points.

What is the equator? What are the parallels? What are meridian circles? — meridians? What is calculated from meridians? What from parallels? Name and define other important circles of the earth.

What is latitude? — longitude? What places are in latitude 0°? What can you say of the length of a degree of latitude? — of the length of a degree of longitude?

How many zones are there? Name and define them. How many seasons are there in the North Temperate Zone? How is the change of seasons caused? By what means is the surface of the earth ordinarily represented? What is Mercator's projection? What meridian of longitude is used for reckoning the beginning of the day?

What points on the earth's surface are nearest the center of the earth? [*Ans.* — The poles.] What is the greatest longitude a place can have? [*Ans.* — 180°.] What places are in longitude 0°? What is the basis of a geographical mile? [*Ans.* — One minute of longitude at the equator.]

Given the longitude of any two places, how do we reckon the difference in time? [*Ans.* — Since the earth rotates upon its axis in twenty-four hours, and since its girth has 360 degrees of longitude, it is plain that 15 degrees of longitude are equal to one hour of time ($360 \div 24 = 15$), and that one degree of longitude is equal to four minutes of time, and one minute of longitude is equal to four seconds of time. Multiplying the difference in degrees of any two places by four must, therefore, give us the difference in time stated in minutes of time.]

II. PHYSICAL GEOGRAPHY

Ever since the first land appeared above the waters that once covered the whole earth, the surface has been undergoing great changes. The fitting of the outer crust about a cooling and shrinking interior has, in places, thrust this crust high above the sea, raising it into plateaus, and wrinkling it into mountains and valleys. As soon as the first mass of land was lifted above sea-level, the waters of the atmosphere began to wear it away and carry back to the ocean the detritus (as the substances worn off are called). Frost and heat have crumbled the rocks at their surface; glaciers have rounded off the tops of the mountains, or scored their slopes with deep furrows. Rivers have worn deep cañons into their beds, and have spread the scourings about their lower courses, filling up depressions, and leveling them into broad plains. Turn our eyes in whatever direction we may, there is no part of the earth's surface that has not been worn and changed by the action of the water; and the same forces that were in operation when the continents rose out of the sea are still active.

An elevation of the Atlantic coast-plain of the United States 100 feet above its present level would destroy nearly every harbor on our eastern seaboard, and with them the commercial supremacy of this region. A slight change in the direction of the winds might reduce by half the rainfall of the Mississippi Basin, and thereby render it valueless as a grain-producing region. If the mild winds that carry warmth and moisture to Europe were changed so as to blow towards the northwest instead of the northeast, the climate of Labrador peninsula would become as mild as that of Virginia, while western Europe would soon be shrouded in ice. The building of the Erie Canal wrested from Philadelphia its commercial supremacy, transferring it to New York; but this canal could not have been constructed but for the natural gap through which Mohawk River flows. The vast water-filled depression which we know as the Great Lakes provides a trade-route, over which the grain of the Dakotas and the ores of Michigan are brought cheaply to our Atlantic ports. Had there been no such natural depression, the Northwest would still be little more than a wilderness; and wheat, iron, and copper would be much more costly than they are.

Physical Geography treats of the earth's surface; of its plants, animals, and minerals; of the land, the currents of the ocean, the winds, and the climate.

The study of Physical Geography may be divided into three parts — (*a*) that of **the land,** (*b*) that of **the water,** and (*c*) that of **the atmosphere.**

(a) THE LAND

It is estimated that one-fourth, or about 53,000,000 square miles of the earth's surface, is land. According to extent, the land is divided into continents and islands; and the surface of each may be diversified by plateaus, mountains, valleys, and plains.

1. CONTINENTS. — A continent is the largest natural division of land. Three continents are usually recognized, — the Eastern, the Western, and the Australian.

The Eastern Continent consists of the grand divisions of Europe, Asia, and Africa. It embraces more than half the land-surface of the globe.

The Western Continent includes the grand divisions of North America and South America. Its length from north to south is nearly 10,000 miles.

The Australian Continent includes Australia and Tasmania, the two being separated by a very shallow, island-dotted strait.

The two larger continents are bordered each by chains of islands situated at no great distance from their shores. These, because of the similarity of their structure to the continents near which they lie, are generally regarded as parts of the continents themselves.

2. ISLANDS. — An island is a body of land entirely surrounded by water. Islands differ from continents not only in size, but in many instances they differ in structure also. They are conveniently classified as *continental* and *oceanic.*

Continental islands are so called because of their similarity of structure to the continents near which they lie. They are usually long and narrow in shape, and their surfaces are commonly mountainous or rugged. In many instances they lie parallel with the coast. Sometimes they extend in a long chain from a projecting peninsula. The Aleutian Islands, the West Indies, and the chain bordering the eastern coast of Asia are examples.

Continental islands are usually the higher crests of partly submerged mountain-chains. Such chains of islands should not be confounded with the "bars" that border coast-plains, and that are situated at no great distance from the latter. Islands of this character are formed by the action of rivers which carry their sediment to the sea, and by the waves which push back the sediment shoreward.

Oceanic islands are situated at a considerable distance from any large body of land. In a few instances they are isolated, and usually they are small in size. Generally they are rugged masses of volcanic rock rising precipitously above the surface of the sea. St. Helena and the Hawaiian Islands are examples.

By far the greater number of oceanic islands are found in the Pacific Ocean. Here they are ranged in chains having a northwest and southeast trend, and in nearly every instance they are covered with growths of coral. These islands appear to be mountain-ranges rising from the surface of a submarine plateau.

An archipelago is a cluster of islands. The Bismarck Islands and the great group north of North America are examples.

3. FORMS OF COAST. — **A coast** is the land bordering on the sea, or on any other large body of water. **A shore** is the line where the land and water meet.

A cape is a point of land extending into the sea. Small peninsulas are sometimes called capes, as, for instance, Cape Ann, Cape May.

The terms *hook*, *bill*, *head*, *point*, *mull*, *naze*, and *nose* are also used to designate capes, as — Sandy Hook, Portland Bill, Dunnet Head, Point Barrow, Mull of Kintyre, the Naze, the Nose, etc.

A promontory is a high, rocky cape. The Rock of Gibraltar and the Cape of Good Hope are examples. Promontories furnish good locations for lighthouses. This is especially true when the promontory is at the angle of a sharp bend of the coast.

A peninsula is a body of land extending into the sea, and nearly surrounded by water. Italy, Florida, and Lower California are examples.

An isthmus is a narrow neck of land connecting two larger bodies of land. The Isthmus of Panama is an example.

The sand-bars formed along the coast by the combined action of waves, currents, and tides are called *spits*. In form a spit may be a cape, a long and narrow island, a peninsula, or a "hook." Sandy Hook, on the coast of New Jersey, is an example.

4. RELIEF FORMS OF LAND. — The surface of the land is diversified by plateaus and plains, mountains and valleys, hills and dales.

A plateau is any high surface of considerable extent. It may be level, or rugged, or mountainous. The region west of the Missouri River, called the Plains, is a plateau. Mexico is a plateau, and the vast area surmounted by the Himalaya and Kuen-Lun mountains is also an excellent example.

Small, flat-topped plateaus are commonly called *table-lands*.

A plain is a level, or nearly level, tract of land at no great elevation above the sea. Siberia and Russia form a vast plain. The central part of North America and of South America are also examples.

Plains are variously named. In the central United States they still retain the name *prairies* given them by the early French explorers. Along the South Atlantic coast they were formerly called *savannahs*, a name still perpetuated in a city of Georgia. In South America the plains of the Orinoco are called *llanos*; the forest-covered plains of the Amazon, *silvas*; and the grassy plains of the Plate-River region, *pampas*.

There is no dividing-line of elevation between plateaus and plains. In popular use the quality of levelness is usually associated with plains, whether high or low.

In Physical Geography plains are sometimes designated by such features as describe their origin or formation. Thus, a *coast-plain* is one formed of the detritus brought down from the slopes of mountain-ranges, and deposited along the shores of the sea. The Atlantic coast-plain is an example. A *marine plain* is an old sea-bed that has been elevated above sea-level. The upper part of the Mississippi valley is an example. An *alluvial plain* is one that has been formed by the deposition of silt from flowing water. Alluvial plains, of which the lower Mississippi valley is an example, are situated along the courses of rivers. A *flood-plain* is that part of a river-valley that is covered at times of very high water. The bottom-lands of the Mississippi are flood-plains.

A mountain-range is a fold or wrinkle in the strata which form the outer layers of the earth's crust. Sometimes the range consists of a single fold; in some instances, as in the Jura Mountains, there are several folds; in still others, as in the Alps, there is a complex crumpling of strata. In many instances the upper layers of the fold have been worn away, leaving a series of parallel upturned edges. The Appalachian Mountains are an example, the ranges of which, in nearly every case, are ridges formed by the unequal wearing of the upper strata.

The highest part of a mountain-range is called its *summit*, or *crest*; any part of the crest considerably higher than the average elevation of the range is a *peak;* the hilly country at the base of a range is called the *foothill* or *piedmont* region.

A mountain system embraces all the ranges and ridges belonging to the same elevation. Thus, the western highlands of North America form the Rocky Mountain System.

A valley is the depression between parallel ranges or ridges. The Shenandoah valley in Virginia, and the Sacramento-San-Joaquin valley of California, are examples.

A transverse valley — that is, a valley crossing a range — is called a *pass*, or *gap*. Fremont Pass in the Rocky Mountains, and Delaware Water-gap, are examples. Passes and valleys having precipitous sides are usually called *cañons*.

Passes and gaps are of the greatest importance commercially, from the fact that they afford the only feasible routes for railways and canals that traverse mountain systems. The commercial supremacy of New York City is due in no small degree to the Mohawk water-gap. Khyber Pass in Afghanistan is the key to the door between India and Europe. For want of passes European railway companies have been compelled to tunnel the Alps.

A divide is a ridge of land that separates adjacent river basins. Thus, the Height of Land in Minnesota separates the Mississippi Basin from the areas that have Arctic drainage. A divide is sometimes called a *watershed.*

There is a common belief that mountain-ranges are always important divides. This is seldom the case. The Appalachian, Rocky, and Himalaya mountains are each pierced by large rivers. The explanation lies in the fact that the rivers are older than the mountain-ranges; and while the mountains were being elevated, the rivers deepened their channels just as rapidly.

A basin is the territory drained by a river-system or by the tributaries of a lake.

A volcano is an opening in the earth's crust, from which steam, various other gases and molten rock are thrown out. In most instances the ejected material forms a cone-shaped mountain, which is also called a volcano. At the top of the volcanic mountain there is usually a cup-shaped depression called the *crater.* In some instances the crater is a deep pit in a high plateau. With few exceptions, volcanoes are situated near the sea or its arms.

Volcanic *ashes* consist of lava so finely divided that it may be carried a long distance by the winds. The alleged *smoke* of an eruption is merely a dense cloud of steam, while of flames there are none. Nearly all the sulphur of commerce comes from the vicinity of volcanoes. (See page 67.) The greater part of borax, a soda salt used in the arts, is obtained from the hot mineral springs which are found in volcanic regions.

Elevations of land are measured from mean tide sea-level.

The highest peak of the United States is probably Mount St. Elias, 19,500 feet. The crests of the Rocky Mountain System vary between 10,000 and 14,000 feet above the sea. Most of the great Central Plain is less than 1000 feet high. The greater part of the Appalachian System is less than 2000 feet high. The highest peak on the earth is probably Mount Everest, 29,000 feet in altitude. The crest of the Himalaya Mountains varies between 20,000 and 29,000 feet above sea-level.

Lake Tiberias is 600 feet, and the surface of the Dead Sea 1300 feet, below sea-level. The Caspian Sea is the lowest part of the largest depression known. Its surface is 84 feet below the ocean. There are several small depressions in Africa, and a number in the United States. In our own country the lowest depressions are Death Valley and the Sink of San Felipe, both of which are in California. A large part of the coast country of The Netherlands has been reclaimed from the sea.

A desert is a rainless region, or one in which the rainfall is insufficient to support more than a scanty vegetation. In nearly every desert there are small areas watered by springs, and therefore fertile. Such areas are called *oases.*

A desert is barren for lack of water only. The surface may be level, or rugged, or mountainous. Vegetation is limited to a few species of plants, or it may be absent altogether. For want of it the surface soil is always more or less pulverized, and shifting dunes are commonly a marked feature of desert regions. From this has come the common belief that the soil of deserts is sandy. As a matter of fact, true sand is of rare occurrence in them. Because of the absence of water and vegetation, a desert region of considerable extent is a greater impediment to commerce than a high and rugged mountain-range.

(b) THE WATER

Water covers about 144,000,000 square miles of the earth's surface, — nearly three-fourths of the whole. A small portion of this consists of fresh water resting in depressions of the land, or flowing in channels over the surface. The great body of salt water, above the surface of which the continents rise, is called THE SEA.

5. DIVISIONS OF THE SEA. — For convenience the sea is divided into five oceans. The arms of these oceans are called "seas," gulfs, bays, straits, and sounds.

The use of the term *sea* to designate any except the great body of ocean water is unfortunate and confusing. It is also very loosely used. Thus, the Caspian and Aral seas are nothing more than large salt lakes; the Baltic and Adriatic seas are more properly gulfs; while the North Sea is not landlocked, and is merely a division of the Atlantic Ocean.

An ocean is the largest natural division of the sea. The five oceans are: the Pacific, Atlantic, Indian, Antarctic, and Arctic.

A "sea" is a nearly landlocked arm of an ocean. The Mediterranean, Black, and Red seas are examples.

A gulf or **bay** is an arm of an ocean extending into the land. Hudson Bay and the Gulf of Mexico are examples.

A small bay is called a *bight*. A very wide river-mouth formed by the action of tides is an *estuary*, as, for instance, Delaware Bay. An inlet nearly cut off from the sea by bars or spits is sometimes called a *lagoon*. A deep bay formed in rocky shores by the action of ice is sometimes called a *fjord*. There is no particular distinction between the terms *gulf* and *bay*.

A strait is a narrow passage that connects two larger bodies of water. Bering Strait and the Strait of Gibraltar are examples.

This word is also used in the plural number; both the Strait of Gibraltar and Florida Strait are frequently spoken of as "the Straits." A strait is also called a *gut*, as the Gut of Canso, Hellgate (formerly horll-*gat*, the "whirling" strait), Catte*gat*, etc. The terms *minch* and *belt* are also used. A wide passage of no great length is usually called a *channel*.

A body of water between a chain of islands and the mainland is often called **a sound**.

6. CIRCULATION OF OCEAN WATERS. — The waters of the sea are in constant motion. Not only is the surface unceasingly tossed by waves, and blown hither and thither in drifts, but the whole mass of water is in constant circulation.

The agents by which this circulation is effected are (*a*) *waves*, (*b*) *tides*, and (*c*) *currents*. Waves are caused by the winds. They are irregular and constant. Tides are regular and periodical. Currents are regular and constant.

(**a**) **A wave** consists of the alternate rising and falling of a mass of water. Most of the alterations of the coast of a body of land are caused by waves. Waves forty or fifty feet high have been observed, but they are of unusual occurrence.

(**b**) **Tides** consist of the passage, twice a day, of a wave of water formed by the attraction of the sun and the moon.

The advance of the wave is called the rising or *flood tide;* the recession of the wave, the *ebb tide.* When sun, moon, and earth are in line the tides are unusually high, and are called *spring tides.* When their positions form a right angle the waves are less marked, and are then called *neap tides.* At such times there are theoretically four tides each day, — two caused by the moon, and two by the sun. The latter are not well marked, and are usually disregarded.

The calculation to find the time of high tide at any place is called the *establishment of its port.* High tide at any place occurs fifty minutes later each day. Ordinarily the difference between high and low tides varies from four to six feet, but when the wave enters a V-shaped estuary this difference may be fifty or sixty feet.

(c) **Ocean Currents.** — Currents are streams of water flowing through the ocean. They are caused mainly by the heating and consequent expansion of the mass of water in equatorial regions. Their direction is modified by the rotation of the earth, by the winds, and by the position of the continents.

The Equatorial Current is about one thousand miles broad, and flows westward with a velocity of from twelve to twenty miles a day. To the parting of this current at the eastern angle of South America are probably due the Gulf Stream and the Brazilian Current.

In the Pacific it divides near the eastern shores of the Old World, forming the Kuro Siwo or Japan Current, and the Australian Current.

The Gulf Stream takes form near Florida Strait. Some of the water comes from the Caribbean Sea through the Yucatan Channel; a part comes from the region north of the West Indies through the Santarem Channel; a certain but inconsiderable amount comes from the Gulf of Mexico. No part of the stream, however, flows around the shores of that Gulf. Off Jupiter Inlet, Florida, it has a maximum velocity varying from three miles to five and a half miles an hour. North of the Grand Banks it ceases to be a definite current, and spreads out into a fan-shaped drift whose motion and direction are governed by the winds.

The Kuro Siwo (*Black Stream*), or Japan Current, has neither so large a volume, so high a temperature, nor so great a velocity as the Gulf Stream. The drift of this stream is pushed against the western shores of North America. Contrary to common opinion, no part of this stream enters Bering Sea.

The Arctic Current consists of two streams, which, emerging from the Arctic Ocean on opposite sides of Greenland, unite near Cape Farewell. These currents meet the Gulf Stream off the coast of Newfoundland, and, it is thought, cause the dense fogs prevalent in that region. A feeble current emerges from the Arctic Ocean through Bering Strait.

The Sargasso Seas (Spanish, *sargazo,* seaweed) are somewhat uncertain areas situated in the regions of calms. Because of the freedom of their waters from disturbance by winds they contain an abundance of aquatic plants.

In other sheltered regions where these plants thrive, great quantities are frequently detached during storms or high winds, and cast ashore. The ashes of the dried plant are the *kelp* of commerce, from which iodine is prepared.

7. CONTINENTAL WATERS. — Enough water falls on the land yearly to cover it to a depth of nearly four feet. Some of this sinks into the porous soil, perhaps reappearing in the form of springs. Another part evaporates, and is carried away by the winds. Most of it, however, collects in channels, and fills depressions, or else flows back to the sea.

A lake is a body of water resting in a depression in the land. The Caspian Sea and Lake Superior are examples. Small lakes are called *ponds*.

Lakes without outlets are usually salt. Such lakes derive their salt from the streams and inlets that feed them. These streams and inlets dissolve mineral salts from the soil, and carry them in solution to the lake. Here, as the water evaporates, the salt is left behind. The Caspian Sea, the Dead Sea, and Great Salt Lake are notable examples of salt lakes.

A lake basin is the territory drained by the tributaries of a lake. Thus, the basin of the Caspian Sea embraces all the territory drained by the Volga, the Ural, and several other rivers.

A river is a large stream of water flowing through the land. It may flow into another river, into a lake, or directly into the sea. Small streams are called *rills*, *rivulets*, *brooks*, and *creeks*. A river which flows into another is called a *tributary*, *affluent*, or *branch*.

The term *creek* was formerly used only of small tidal inlets and estuaries of the ocean. It is so used along the coast of Maine at the present time. The Dutch settlers of New York called such inlets *kills*. Harlem Kill, Arthur (*achtyr* or "after") Kill, and Kill von Kull are examples.

A river basin is the area or territory drained by a river.

A river-system embraces the main stream with all its tributaries.

A glacier is a river of ice. It is formed mainly of the snow which has fallen or blown into ravines situated in the region of perpetual snow. The ice-stream flows down the ravine at a rate varying from a few inches to a few feet a day. In polar regions, glaciers are usually vast sheets of ice slowly moving down the slopes on which they lie.

Icebergs are formed when a glacier terminates at the sea. Sometimes they are detached masses of ice that fall from a protruding glacier; but in general the end of the glacier, pushed to some distance into the sea, is broken off and floated away.

The icebergs of the North Atlantic come mainly from a few glaciers on the west coast of Greenland. From May to July the larger ones drift about the Grand Banks, — a danger to transatlantic steamers.

(c) THE ATMOSPHERE

The atmosphere, or air, is that portion of the earth which envelops the solid and liquid parts. It consists of a mixture of gases, — mainly nitrogen, oxygen, carbon-dioxide, and the vapor of water. The last two form not more than three or four parts in one thousand. At the sea-level the air rests upon the earth with an average pressure of 14.7 pounds on every square inch. Air is highly elastic. Moreover, it increases in dimensions when heated. Warm air is, therefore, lighter than an equal volume of cold air. The amount of water-vapor varies greatly, increasing when the temperature rises, and decreasing when the temperature falls.

8. CONSTANT WINDS. — Wind is air in motion. It is caused by the unequal heating of the air in different localities. When at any place the air is heated, it increases in volume, and therefore becomes lighter. It is consequently pushed upward by the cold air which flows in to take its place. All general motions of the atmosphere are due to its heating and expansion in equatorial regions. This causes in upper regions a movement of air from the equator towards the poles; and at the surface, a counter motion from higher latitudes towards the equator. In equatorial regions the rotation of the earth deflects these currents to the west, and in temperate latitudes to the east.

The trade-winds prevail in equatorial latitudes. They blow from the northeast and from the southeast, and are separated by the region of *equatorial calms*. The trade-wind belt, with the intervening calm belt, oscillates north and south with the apparent motion of the sun.

The prevailing westerlies, or **anti-trade winds,** are found in temperate latitudes. They blow from the southwest in the North Temperate, and from the northwest in the South Temperate, Zone. These winds are not so regular as the trade-winds. They are separated from the latter by the *calms of Cancer* and the *calms of Capricorn*. (See *Chart*, page 13.) Their limits also shift with the position of the sun.

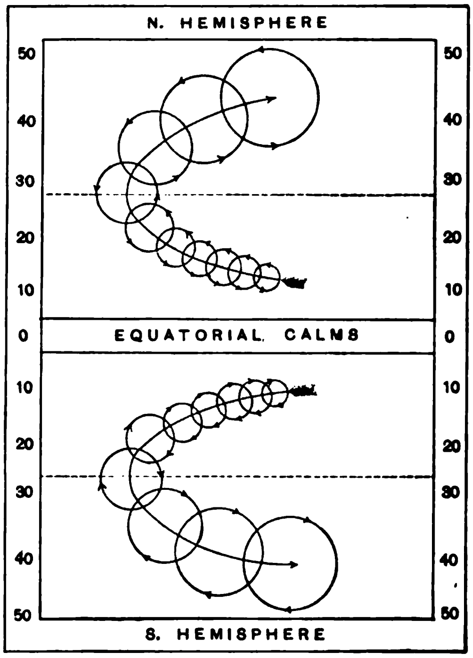
Monsoons are winds which blow half the year in one direction, and the other half in an opposite direction. They usually prevail on the western and southern coasts of continents.

9. INCONSTANT WINDS.

On the land the winds are inconstant and irregular; and it is along the immediate coast regions only that the trade-winds, prevailing westerlies, and monsoons are noticed.

The land-and-sea breeze is occasionally observed near the shores of large bodies of water. This wind is a sea-breeze (*i.e.* from the sea) by day and a land-breeze at night. During the day the earth becomes heated to a higher temperature than the water. The air being warmed, rises, and the consequent up-draught over the land is accompanied by a stiff breeze from the sea. After sunset these conditions are reversed. The land parts with its heat so readily that the air resting upon it becomes colder and therefore heavier than that over the water, and a land-breeze results.

A cyclone is a rotatory storm. Cyclones are caused by the overheating of the air next the surface of the earth. This, after a while, causes an up-draught, towards which the wind blows from all directions. The up-draught is the center of the cyclone, or the "storm-center," towards which the wind blows in a spiral, or whirl. In the northern hemisphere the whirl is in a direction opposite to that of the hands of a watch. In the southern hemisphere it blows with the watch's hands. The path of the cyclone is shown in the diagram. Cyclones of the sea follow pretty nearly the tracks of warm ocean-currents.



Cyclone Paths

The path of the cyclone is usually two or three thousand miles in length; its breadth several hundred miles. The *hurricanes* of the West Indies and the *typhoons* of the China Sea are cyclones.

A tornado is a rotatory storm which is prevalent mainly over great plains. The path of the tornado rarely exceeds forty or fifty miles in length, and the destructive part of the whirl may be only a few rods in diameter.

A waterspout is formed when a tornado passes over a body of water. Waterspouts are the most prevalent on the ocean.

10. ATMOSPHERIC MOISTURE. — Water exists in three forms. Below 32° F. it is ice, a solid; between 32° and 212° it is a liquid, its more common form; above 212° it boils, and becomes a vapor. A small portion is always present in the air as vapor at all temperatures. This vapor is a *part of the atmosphere.*

The amount of vapor is variable, and depends on the temperature. If the temperature be high, there may be as many as 22 grains of water in every cubic foot of air.

At 100° it will contain about 20 grains; at 90°, about 15 grains; at 80°, about 11 grains; at 50°, only 4 grains; and at 32°, the freezing-point of water, scarcely 2 grains. If air at 80° be cooled to 50°, all the vapor in excess of 4 grains will be *condensed.*

When all the moisture is present that can be held in the form of vapor, the air is said to be *saturated,* or at the *dew-point.* If the temperature fall never so little, the excess will appear in the form of dew, frost, fog, cloud, rain, snow, or hail.

11. CLIMATE. — Climate is the condition of a region with reference to heat and moisture. It is modified mainly by latitude, altitude, the winds, and the position of high mountain-ranges. It is also modified by the change of seasons.

Latitude modifies the temperature of a region. In the Torrid Zone, where the sun's rays are practically vertical all the year, the climate is warm. Here the only seasons are the rainy and the dry. In the Temperate zones, where the rays of the sun are more or less oblique, the average temperature is considerably lower. Here there are the alternate periods of warm and cold weather called summer and winter. On western and southern coasts lying in the Temperate zones the seasons are also divided into the rainy and the dry. In the Frigid zones the cold is intense; and the seasons consist of a day (summer), and a night (winter), each six months in duration.

Altitude modifies temperature mainly, but it also modifies the amount of rainfall. The temperature falls, on an average, one degree for every 300 feet of altitude. In the North Temperate Zone, there is perpetual snow above the altitude of 12,000 feet.

The limit of perpetual snow varies greatly. In the northern part of the North Temperate Zone it falls to less than 7000 feet; in the southern part it is above 14,000 feet. It is higher on the Pacific than on the Atlantic slope of North America.

The rainfall also lessens with altitude. Comparatively little rain or snow falls above an altitude of 12,000 feet.

Winds affect both temperature and moisture. If the prevailing winds are ocean winds, the seasons are usually a rainy and a dry. In regions swept by ocean winds the temperature is usually equable, there being comparatively little difference between summer and winter. The climate of the Pacific coast of the United States is an example. On the contrary, if the prevailing winds are land winds, the rainfall is usually distributed throughout the year. There is also considerable difference between the temperature of winter and that of summer.

High mountain-ranges materially affect the rainfall of a region, especially when they are situated near a coast that is swept by ocean winds. Thus, the Chilean Andes wring nearly every drop of moisture from the rain-bearing winds of the Pacific. The western slope is deluged with rain, while the eastern receives none. The Sierra Nevada and Cascade ranges condense the moisture of the west winds, giving the Pacific Slope from

25 to 100 inches of rain, while the Great Basin receives hardly three inches. Australia has no high mountain-range, and for want of it the greater part of the continent is a desert.

QUESTIONS

What is Physical Geography? What is said of the changes that have taken place on the face of the earth? What are the agents that effect these changes? What would be the result were the Atlantic coast raised 100 feet? — if the Mississippi valley were depressed 1000 feet? What are the three divisions of Physical Geography? What part of the earth's surface is land?

What does the Eastern Continent comprise? — the Western? — the Australian? How are islands classified? What is a continental island? — an oceanic island? What is said of the wave-formed islands, such as border the South Atlantic and Gulf coasts? — of coral islands? What is an archipelago?

How is the surface of the land diversified? What is a plateau? — a table-land? — a plain? What is an alluvial plain? — a coast-plain? What is said of the commercial importance of passes? What is said of the situation of volcanoes with respect to the sea? What commercial products are obtained from volcanic regions? From what base-level are elevations of land measured? Name several important depressions below sea-level. What depressions of this character in the United States? What is a desert?

What are the largest divisions of the sea called? Name the oceans in the order of their size.

What three motions have ocean waters? What are tides? By what are they caused? What is meant by flood tide? — ebb tide? — neap tide? — spring tide? What is the interval of time between successive high tides? — [*Ans.* — About twelve hours and fifty minutes.] Name the principal causes of ocean currents. Describe the Equatorial Current, — the Gulf Stream, — the Kuro Siwo, or Japan Current, — the principal Arctic Current. What are Sargasso seas? What commercial product is obtained from floating seaweed?

Explain how continental waters are derived from the ocean. What becomes of the water that falls on the land? Define lake, — lake basin. Under what circumstances may lakes become salt? What is a river? By what names are small streams called? What is a river basin? — a river system? What is a glacier? What is said of the origin of icebergs? Whence do many of the icebergs of the North Atlantic come?

What is the atmosphere? Of what gases is it composed? What is its weight on a square inch of surface? How does heat affect the atmosphere? What is said of the amount of water-vapor in the atmosphere? How is the direction of the principal air-currents modified? Describe the trade-winds. Where are they prevalent? What is their direction? Where are the belts of prevailing westerlies? What is their direction? What and where are the various calm-belts? What are monsoons?

In respect to constancy, how do land winds compare with ocean winds? What are land-and-sea breezes? What is a cyclone? How do cyclones originate? What is the direction of the path in each hemisphere? What is the direction of the whirl? What is a tornado?

What are the three forms in which water may exist? What causes the change from one form to another? When is air said to be saturated, or at the dew-point? What results when air is cooled below the dew-point?

What is climate? By what is it modified? How is climate modified by latitude? — by altitude? — by winds? — by high mountain-ranges? How do the Chilean Andes affect the rainfall of South America? What is the effect of the Sierra Nevada and Cascade ranges on the rainfall of the Great Basin?

REFERENCE TABLES

I. AREA AND POPULATION OF THE STATES AND TERRITORIES OF THE AMERICAN UNION

STATES. (44)	AREA, SQUARE MILES.	POPULATION 1890.	STATES. (44)	AREA, SQUARE MILES.	POPULATION 1890.
Alabama	52,250	1,513,017	New York	49,170	5,997,853
Arkansas	53,850	1,128,179	North Carolina	52,250	1,617,947
California	158,360	1,208,130	North Dakota	70,795	182,719
Colorado	103,925	412,198	Ohio	41,060	3,672,316
Connecticut	4,990	746,258	Oregon	96,030	313,767
Delaware	2,050	168,493	Pennsylvania	45,215	5,258,014
Florida	58,680	391,422	Rhode Island	1,250	345,506
Georgia	59,475	1,837,353	South Carolina	30,570	1,151,149
Idaho	84,800	84,385	South Dakota	77,650	328,808
Illinois	56,650	3,826,351	Tennessee	42,050	1,767,518
Indiana	36,350	2,192,404	Texas	265,780	2,235,523
Iowa	56,025	1,911,896	Vermont	9,565	332,422
Kansas	82,080	1,427,096	Virginia	42,450	1,655,980
Kentucky	40,400	1,858,635	Washington	69,180	349,390
Louisiana	48,720	1,118,587	West Virginia	24,780	762,794
Maine	33,040	661,086	Wisconsin	56,040	1,686,880
Maryland	12,210	1,042,390	Wyoming	97,890	60,705
Massachusetts	8,315	2,238,943			
Michigan	58,915	2,093,889	TERRITORIES.		
Minnesota	83,365	1,301,826	(7)		
Mississippi	46,810	1,289,600	Alaska	577,390	31,795
Missouri	69,415	2,679,184	Arizona	113,020	59,620
Montana	146,080	132,159	District of Columbia	70	230,392
Nebraska	77,510	1,058,910	Indian Territory	31,400	186,490
Nevada	110,700	45,761	New Mexico	122,580	153,593
New Hampshire	9,305	376,530	Oklahoma	39,030	61,834
New Jersey	7,815	1,444,933	Utah	84,970	207,905

II. CITIES AND TOWNS OF THE UNITED STATES HAVING A POPULATION OF MORE THAN 10,000; CENSUS OF 1890

Akron, O.	27,702
Albany, N. Y.	94,923
Alexandria, Va.	14,318
Allegheny, Pa.	104,967
Allentown, Pa.	25,183
Alpena, Mich.	11,228
Alton, Ill.	10,184
Altoona, Pa.	30,269
Amsterdam, N. Y.	17,264
Anderson, Ind.	10,759
Appleton, Wis.	11,825
Asheville, N. C.	10,433
Atchison, Kan.	14,222
Atlanta, Ga.	65,514
Atlantic City, N. J.	13,038
Auburn, Me.	11,228
Auburn, N. Y.	25,887
Augusta, Ga.	33,150
Augusta, Me.	10,521
Aurora, Ill.	19,634
Austin, Texas	15,324
Baltimore, Md.	434,439
Bangor, Me.	19,090
Baton Rouge, La.	10,397
Battle Creek, Mich.	13,090
Bay City, Mich.	27,826
Bayonne, N. J.	18,996
Beatrice, Neb.	13,921
Belleville, Ill.	15,360
Beverly, Mass.	10,821
Biddeford, Me.	14,418
Binghamton, N. Y.	35,093
Birmingham, Ala.	26,241
Bloomington, Ill.	22,242
Boston, Mass.	448,477
Bradford, Pa.	10,478
Bridgeport, Conn.	48,856
Bridgeton, N. J.	11,471
Brockton, Mass.	27,294
Brookhaven, N. Y.	12,572
Brookline, Mass.	12,103
Brooklyn, N. Y.	804,377
Buffalo, N. Y.	254,457
Burlington, Iowa.	22,528
Burlington, Vt.	14,566
Butte City, Mont.	10,701
Cairo, Ill.	10,044
Cambridge, Mass.	70,028
Camden, N. J.	58,274
Canton, O.	26,327
Carbondale, Pa.	10,826
Cedar Rapids, Iowa	17,997
Charleston, S. C.	54,592
Charlotte, N. C.	11,555
Chattanooga, Tenn.	29,113
Chelsea, Mass.	27,909
Chester, Pa.	20,167
Cheyenne, Wy.	11,693
Chicago, Ill.	1,098,576
Chicopee, Mass.	14,050
Chillicothe, O.	11,256
Cincinnati, O.	296,309
Cleveland, O.	261,546
Clinton, Iowa	13,629
Clinton, Mass.	10,424
Cohoes, N. Y.	22,432
Columbia, Pa.	10,597
Columbia, S. C.	14,508
Columbus, Ga.	18,650
Columbus, O.	90,398
Concord, N. H.	17,004
Council Bluffs, Iowa	21,388
Covington, Ky.	37,375
Cumberland, Md.	10,030
Dallas, Texas	38,140
Danbury, Conn.	19,385
Danville, Ill.	11,528
Danville, Va.	10,285
Davenport, Iowa	25,161
Dayton, O.	58,868
Decatur, Ill.	16,841
Denison, Texas	10,959
Denver, Col.	106,713
Des Moines, Iowa	50,067
Detroit, Mich.	205,669
Dover, N. H.	12,790
Dubuque, Iowa	30,147
Duluth, Minn.	32,725
E. Liverpool, O.	10,947
Easton, Pa.	14,185
E. Portland, Ore.	10,481
E. St. Louis, Ill.	15,156
Eau Claire, Wis.	17,438
Elgin, Ill.	17,429
Elizabeth, N. J.	37,683
Elkhart, Ind.	11,370

Elmira, N. Y.	28,070
El Paso, Texas	10,836
Erie, Pa.	39,699
Evansville, Ind.	50,674
Everett, Mass.	11,068
Fall River, Mass.	74,398
Findlay, O.	18,674
Fitchburg, Mass.	22,037
Flushing, N. Y.	19,136
Fond du Lac, Wis.	11,942
Fort Scott, Kan.	11,837
Fort Smith, Ark.	11,291
Fort Wayne, Ind.	35,349
Fort Worth, Texas	20,725
Freeport, Ill.	10,159
Galesburg, Ill.	15,212
Galveston, Texas	29,118
Gloucester, Mass.	24,651
Gloversville, N. Y.	13,796
Grand Rapids, Mich.	64,147
Greenwich, Conn.	10,120
Hagerstown, Md.	11,698
Hamilton, O.	17,519
Hannibal, Mo.	12,816
Harrisburg, Pa.	40,164
Hartford, Conn.	53,182
Hastings, Neb.	13,793
Haverhill, Mass.	27,402
Hazelton, Pa.	11,818
Helena, Mont.	13,834
Hempstead, N. Y.	23,517
Hoboken, N. J.	43,560
Holyoke, Mass.	35,637
Hornellsville, N. Y.	10,948
Houston, Texas	27,411
Hudson, N. Y.	10,027
Huntington, W. Va.	10,082
Hyde Park, Mass.	10,193
Indianapolis, Ind.	107,445
Ironton, O.	10,922
Ishpeming, Mich.	11,184
Ithaca, N. Y.	11,557
Jackson, Tenn.	10,022
Jackson, Mich.	20,779
Jacksonville, Fla.	17,160
Jacksonville, Ill.	12,357
Jamaica, N. Y.	13,646
Jamestown, N. Y.	15,991
Janesville, Wis.	10,631
Jeffersonville, Ind.	11,274
Jersey City, N. J.	163,987
Johnstown, Pa.	21,129
Joliet, Ill.	27,407
Kalamazoo, Mich.	17,857
Kansas City, Kan.	38,170
Kansas City, Mo.	132,416
Keokuk, Iowa	14,075
Key West, Fla.	18,058
Kingston, N. Y.	21,181
Knoxville, Tenn.	22,447
La Crosse, Wis.	25,053
Lafayette, Ind.	16,407
Lancaster, Pa.	32,090
Lansing, Mich.	12,630
Lansingburg, N. Y.	15,023
Laredo, Texas	11,313
Lawrence, Mass.	44,654
Leadville, Col.	11,159
Leavenworth, Kan.	20,250
Lebanon, Pa.	14,737
Lewiston, Me.	21,668
Lexington, Ky.	22,355
Lima, O.	15,970
Lincoln, Neb.	55,491
Little Rock, Ark.	22,496
Lockport, N. Y.	16,003
Logansport, Ind.	13,798
Long Island City, N. Y.	30,396
Los Angeles, Cal.	50,394
Louisville, Ky.	161,005
Lowell, Mass.	77,696
Lynchburg, Va.	19,779
Lynn, Mass.	55,727
McKeesport, Pa.	20,711
Macon, Ga.	22,698
Madison, Wis.	13,392
Mahanoy, Pa.	11,291
Malden, Mass.	23,021
Manchester, N. H.	44,126
Manistee, Mich.	12,799
Mansfield, O.	13,542
Marlborough, Mass.	13,805
Marinette, Wis.	11,513
Massillon, O.	10,068
Medford, Mass.	11,079
Memphis, Tenn.	64,586
Menomenee, Mich.	10,606
Meriden, Conn.	21,230
Meridian, Miss.	10,889
Michigan City, Ind.	10,704
Middletown, N. Y.	11,918
Milwaukee, Wis.	204,150
Minneapolis, Minn.	164,738
Mobile, Ala.	31,822
Moline, Ill.	11,995
Montgomery, Ala.	21,790
Muncie, Ind.	11,339
Muscatine, Iowa	11,432
Muskegon, Mich.	22,668
Nanticoke, Pa.	10,037
Nashua, N. H.	19,311
Nashville, Tenn.	76,309
Nebraska City, Neb.	11,472
New Albany, Ind.	21,000
Newark, N. J.	181,518
Newark, O.	14,369
New Bedford, Mass.	40,733
New Brighton, N. Y.	16,400
New Britain, Conn.	19,010
New Brunswick, N. J.	13,459
Newburgh, N. Y.	23,263
Newburyport, Mass.	13,947
New Castle, Pa.	11,581
New Haven, Conn.	85,981
New London, Conn.	13,759
New Orleans, La.	241,995
Newport, Ky.	24,938
Newport, R. I.	19,449
Newton, Mass.	24,379
Newton, N. Y.	17,537
New York, N. Y.	1,513,501
Norfolk, Va.	35,454
Norristown, Pa.	19,750
North Adams, Mass.	16,074
Northampton, Mass.	14,990
Norwalk, Conn.	17,739
Norwich, Conn.	16,192
Oakland, Cal.	48,590
Ogden, Utah	14,919
Ogdensburgh, N. Y.	11,677
Oil City, Penn.	10,943
Omaha, Neb.	139,526
Orange, N. J.	18,774
Oshkosh, Wis.	22,752
Oswego, N. Y.	21,826
Ottumwa, Iowa	13,996
Oyster Bay, N. Y.	13,788
Paducah, Ky.	13,024
Passaic, N. J.	13,027
Paterson, N. J.	78,358
Pawtucket, R. I.	27,502
Peabody, Mass.	10,158
Peekskill, N. Y.	10,026
Pensacola, Fla.	11,751
Peoria, Ill.	40,758
Petersburgh, Va.	23,317
Philadelphia, Pa.	1,044,894
Pittsburgh, Pa.	238,473
Pittsfield, Mass.	17,281
Pittston, Pa.	10,295
Plainfield, N. J.	11,250
Port Huron, Mich.	13,519
Portland, Me.	36,608
Portland, Ore.	47,294
Portsmouth, O.	12,387
Portsmouth, Va.	12,345
Pottstown, Pa.	13,201
Pottsville, Pa.	14,194
Poughkeepsie, N. Y.	22,836
Providence, R. I.	132,146
Pueblo, Col.	28,128
Quincy, Ill.	31,478
Quincy, Mass.	16,723
Racine, Wis.	21,022
Raleigh, N. C.	12,798
Reading, Pa.	58,926
Richmond, Ind.	16,849
Richmond, Va.	80,838
Rochester, N. Y.	138,327
Rockford, Ill.	23,589
Rock Island, Ill.	13,596
Rome, N. Y.	14,980
Sacramento, Cal.	26,272
Saginaw, Mich.	46,169
St. Joseph, Mo.	52,811
St. Louis, Mo.	451,770
St. Paul, Minn.	133,156
Salem, Mass.	30,801
Salt Lake City, Utah	45,025
San Antonio, Texas	38,681
San Diego, Cal.	16,153
Sandusky, O.	19,234
San Francisco, Cal.	297,990
San José, Cal.	18,027
Saratoga Springs, N. Y.	13,124
Savannah, Ga.	41,762
Schenectady, N. Y.	19,857
Scranton, Pa.	83,450
Seattle, Wash.	43,914
Sedalia, Mo.	13,994
Shamokin, Pa.	14,339
Sheboygan, Wis.	16,341
Shenandoah, Pa.	13,445
Sioux City, Iowa	37,862
Sioux Falls, S. D.	10,154
Somerville, Mass.	40,152
South Bend, Ind.	21,786
So. Bethlehem, Pa.	10,386
Spokane Falls, Wash.	19,917
Springfield, Ill.	24,852
Springfield, Mass.	44,179
Springfield, Mo.	21,842
Springfield, O.	32,135
Stamford, Conn.	15,685
Steubenville, O.	13,363
Stillwater, Minn.	11,239
Stockton, Cal.	14,376
Syracuse, N. Y.	87,877
Tacoma, Wash.	35,858
Taunton, Mass.	25,448
Terre Haute, Ind.	30,287
Tiffin, O.	10,978
Toledo, O.	82,652
Topeka, Kan.	31,809
Trenton, N. J.	58,488
Troy, N. Y.	60,605
Utica, N. Y.	44,001
Vicksburg, Miss.	13,298
Waco, Texas	13,067
Waltham, Mass.	18,707
Washington, D. C.	230,392
Waterbury, Conn.	28,591
Watertown, N. Y.	14,733
West Bay City, Mich.	12,910
West Troy, N. Y.	12,942
Weymouth, Mass.	10,866
Wheeling, W. Va.	35,052
Wichita, Kan.	23,735
Wilkesbarre, Pa.	37,651
Williamsport, Pa.	27,107
Wilmington, Del.	61,437
Wilmington, N. C.	20,013
Windham, Conn.	10,025
Winona, Minn.	18,208
Woburn, Mass.	13,499
Woonsocket, R. I.	20,759
Worcester, Mass.	84,655
Yonkers, N. Y.	31,945
York, Pa.	20,849
Youngstown, O.	33,199
Zanesville, O.	21,117

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